The Builder.

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Rural Housing: An Analysis of Evidence.

WE are still a long way from any general agreement of opinion in regard to the question of rural housing, and it may be worth while to analyse and sum up some of the information on the subject which is to be found in the blue-book of evidence given before the Select Committee on the "Public Health Acts (Amendment) Bill," and also in the two important papers read at a recent discussion on Rural Housing at the Sanitary Institute, and which, along with the discussion, were reported at the time, but in a necessarily much abridged form, in our pages. The subject naturally falls under two main heads, that concerned with law and administration, and that concerned with the actual or possible construction of cottages—what is required and what can be provided; for even as to what is required there are very contradictory opinions, though the papers and discussion at the Sanitary Institute threw some new and useful light on the subject.

As we need not remind our readers, the discussion of the subject, and the proposals of the Public Health Acts (Amendment) Bill, were to a great extent brought about by complaints in regard to the inconvenient and oppressive action of by-laws in force in many Rural districts; complaints which we from the first believed to be considerably exaggerated, and which were made in some instances by people who had sent in bad or unintelligible plans of cottages, and found these condemned for better reasons than their promoters were able to understand. It is naturally to the evidence before the Select Committee that we look chiefly for information on this subject of by-laws and their administration.

The burden of the complaint made against rural by-laws is the requirement that houses should be built only "of brick or stone or other incombustible material"; and it is contended that such a provision (which exists in the great majority of by-laws at present in force in England) renders it impossible for well-meaning landlords to provide cottages for their tenants at a reasonable cost. The special insertion of the word "incombustible," without any other characterising adjective, is unfortunate in a double sense. First, it appears to lay the whole stress on the question of liability to fire, which is only one, and (in country districts) one of the less important considerations in regard to the material of which cottages are to be built; for in the case of isolated cottages in the country danger from fire is a much less serious matter, both in regard to the probability of fires and to their possible results, than where houses are crowded together in towns; but the questions of warmth, freedom from damp, and structural stability, are as important in a country cottage as in a street house. Secondly, it furnishes the adverse critic of rural by-laws with a ready argument; he says, in effect, you are laying stress on incombustible quality for walls, in situations where this is really of very secondary consequence, and thereby putting those who would build cottages to unnecessary expense. If it were not for this "incombustible" requirement we could build cottages much cheaper of wood, or of other materials which are really as incombustible as brick or stone, but which your by-laws will not admit as such.

Thus the whole subject is made to turn on a side issue, and the principal requirements of warmth and health, and structural stability (the latter point affecting the landlord as well as the tenant) are ignored. As far as danger from fire is concerned, we see little objection to the erection of isolated wooden or half-timbered cottages in the country. The question is whether such cottages are really suitable and healthful for habitation in winter, and whether, from the point of view of the landlord, they are really any saving, since they cannot last so long as a brick or stone cottage, and even during their shorter life are likely to need frequent repair. On this point some useful light was thrown by the first witness examined before the Select Committee: Mr. Monro, Assistant Secretary of the Local Government Board. He admitted that, judging from official correspondence, the chief complaint against the by-laws was this requirement to build in stone or brick. His own expressed opinion was that it would be difficult to say what was the saving in timber building, as it was not so

much cheaper than brick or stone to begin with, and cost more in keeping up; but the point of his evidence, on this head, was that in the Guildford Rural Districts there were fourteen parishes without any by-laws, as against four governed by by-laws; that therefore in those fourteen parishes builders were at liberty to put up cottages of wood or other materials as they pleased, "but no one has yet done so."

"211. That is to say, in the districts where they might have adopted wood, they had not done so?—Yes. So I think, that if wooden houses were conspicuously cheaper and equally good, they would be built."

That is an important statement in regard to one district, at all events.

In another portion of his evidence the same witness stated that the Local Government Board were in favour of by-laws of definite character, and objected to by-laws in a general form, with discretionary power attached to them. He cited for example an old by-law that an ashpit should be constructed "of such size and dimensions and in such manner as shall be approved by the local authority." Such a by-law was "too indefinite," and the Board in its present mind would not confirm it. As we know, one of the popular cries has been lately for discretionary power to dispense with a by-law in special cases. That would be a reasonable, even a desirable course, if one could always be sure how the discretionary power would be wielded, and what kind of people would exercise it. But as we cannot be sure of that, discretionary power vested entirely in a local authority is a dangerous privilege and might lead to a great deal of injustice and dissatisfaction.

Further points in regard to the advantages or disadvantages of by-laws are furnished in looking over the evidence. The evidence of Sir William Chance, who is chairman of the Building By-laws Reform Association, turns chiefly on the difficulty, which of course is constantly cropping up, of framing by-laws which will be fair to all cases. It would, as he says, be very difficult to draw a definite line between a crowded and a non-crowded district adjoining one another, and rule that those on one side of the line should be subject to by-laws while those on the other side should be exempt. He seems to suggest that circumstances and not locality should decide when there may be exemption. There is a good deal of force in his remark that "the principle of building by-laws ought to be to protect the man who cannot defend himself, but also to relieve the man who can defend himself. I can find my architect and builder, but another man, a poor man, cannot." There is something in that, in theory; but in practice we find that the poor man requires also to be "defended," not only from the speculating builder, but from the well-meaning but ignorant wealthy landlord. In the case of Sir W. Grantham's cottages, about which ignorant journalists have made such a foolish fuss, but for the by-laws his tenants would have had cottages put on them with absurd planning, and such as could never have been comfortable or healthy to live in. On the other hand, if local authorities had and exercised a right to exempt a man who employed a competent architect, on the ground "we know of course that you will do what is right," it might really be the most sensible course; but we know perfectly well that any authorities who took that course would soon get into hot water, and that we should hear the cry raised, "There is one law for the rich and another for the poor." On the other hand, what we should come to without by-laws is indicated in the evidence of Sir W. Grantham, who said that "these cottages are built without plans; the owners' workmen build them": which is likely enough for such plans as he proposed to build—one room opening through another, and every bedroom with an external door direct into the open air. Such cottages no doubt can be built without plans, but they are not fit to live in.

In spite of the difficulty of administration, there is evidence that by-laws have not been without their advantages. Dr. Franklin Parsons, one of the medical officers of the Local Government Board, gave evidence, arising from thirty years' experience, to the effect that there had been, in the districts that he was acquainted with, a great improvement in cottage building of late years; that the older cottages were generally the worst built; that even where there were no by-laws there was a higher standard of building, and that in his opinion the Model By-laws of the Local Government Board had greatly conduced to that higher standard; and we believe he is perfectly right. In regard to the idea of a dispensing power being given to the local authorities, he thought "it might, in some cases, lead to jobbery." Mr. Brooke Kitchin, Chief Architect to the Local Government Board, was of opinion, like the last-quoted witness, that the Model By-laws had certainly "had a good effect on the construction of villas. I think it has raised the standard of building very much indeed." Mr. Greatorex, Borough Surveyor of West Bromwich, thought that the by-laws had not caused any great amount of friction, considering the thousands and thousands of buildings erected: "certainly not that amount which has been made out"; and we have no doubt that he is right. The cry against by-laws was a good popular cry for the newspapers, and was taken up on that account. Mr. Walter Webb, Superintending Surveyor of the Board of Agriculture, mentioned one point on which a reasonable exemption would be granted: "we should not insist on concrete [under floors] where the Inspector reported that the soil was so good that it was unnecessary." This is in contrast with a case mentioned in Mr. Thackeray Turner's evidence, where a house was on solid rock, and the surveyor demanded that 6 in. deep of the rock should be excavated to replace it with concrete; which is surely not a reasonable exercise of authority.

There is much more evidence in regard to by-laws which we have not space to go into; but the conclusion from a consideration of the whole evidence is that by-laws in rural districts are necessary; that in the main they have had a salutary effect in raising the standard of building; and that the inconvenience and friction caused by them has been greatly exaggerated. The conclusion seems to be that a reasonable amount of dispensing power should be permitted to the authorities; only there arises no doubt the question—*Quis custodiet ipsos custodes?* Mr. Lacy Ridge said in his evidence that "if they [the local authorities] were more competent bodies I should quite approve of its being wholly a question of discretion; but I am afraid they are not sufficiently competent bodies." In a letter to the *Times* in September Sir W. Chance suggested, as a way out of the difficulty, that if a District Council found that to enforce any particular by-law would be unnecessary, absurd, or unjust in any particular case, it should have power to grant exemption subject to the approval of the Local Government Board, to which it would report the case; and if the proposal rested on reasonable grounds he thought it would not be likely to be over-ruled. We may quote the following sentence from his letter:—

"Everyone who has studied the subject is, I think, agreed that there is a great danger in allowing a District Council to exercise an unfettered discretion as to when it should enforce or not enforce its building regulations; but if the final decision lay with a body which would deal with the case without local prejudice or bias, that danger would not be present. Further, the expense of Courts of Appeal established *ad hoc* would be saved."

That appears to us to be a really reasonable and practical way out of the *impasse;* and we hope it may be acted upon.

We now come to the question, of what materials should rural cottages be built, or be allowed to be built? There was the evidence of several architects before the Select Committee, which dealt partly with this subject; but the architects do not always show very well in the examination. Mr. Stenning, of East Grinstead, said that he found all over the country wooden cottages standing for hundreds of years in a good state of preservation to-day, and that in his opinion they were warmer and better houses than brick. "Wooden cottages" is a rather vague term; we do not know whether it means what are called half-timber houses, or houses entirely faced with wood externally. As to the statement that they are warmer than brick walls we are absolutely sceptical, on grounds of practical observation; and as to their having stood hundreds of years, one would like definite examples to be cited; and in any case, in regard to their endurance, how is one to know how often they have been repaired? The same witness goes on to recommend wooden framing, with boarding outside and lath and plaster inside; "therefore you get two skins and get an air-space which, in my opinion, is valuable both as regards heat and cold." We had this fallacy of the air-space flourished before us over and over again in the descriptions of the Letchworth exhibition cottages; and we repeat emphatically what we have already said in regard to those examples, that whatever truth there may be as to the efficacy of the "air-space" in keeping out heat or cold, the advantage is more than counterbalanced by the evil of having the house walls full of hollow spaces which cannot be got at or examined. You never know what may be going on

or collecting in them; and whether for town or country houses, our dictum is—*no hollow spaces which are out of the possibility of inspection.* Even hollow brick walls we believe to be a mistake. You may think you have built them so that nothing can get into them; but you can never be sure that weak points will not develop in process of time, and that they may not become haunts of rats and other vermin, and even receptacles for the damp which they were intended to keep out. And in regard to the question of wooden houses generally, there is a great deal in the shrewd suggestion made by Dr. Franklin Parsons in his evidence:—

"1098. But as regards the structure of the walls you have no objection to the exemption?—I have an objection, because a building which is built of timber or unsubstantial material like that very much sooner gets out of repair.

1099. What do you call unsubstantial?—Corrugated iron on a timber frame or lath and plaster.

1100. Or timber?—Yes, or timber. Of course, I recognise that timber buildings may be built strongly and substantially, but if they are built for cheapness the probability is they will not be so built. *If built of timber merely because it is the cheapest material with which houses can be run up they will probably not be substantially built.**

1101. As regards cottages, do you think they ought to be built to last as many years as a very large house or castle?—Ordinarily I should think they should be. If they are for agricultural labourers they ought to be made to last, because the probability is that they will always be required. There may be something from another point of view to be said in favour of buildings, of which the use is only temporary, being allowed to be built in a temporary way. For instance, navvies' huts are commonly built so when the work for which they are required is not likely to last long. There may be reasons for that, but not where houses are likely to be permanently required."

This is one of the wisest and most sensible utterances to be found in the whole bulk of the evidence. Mr. Ridge's statement that wooden cottages with weather tiling will keep out the wet, and that a 9-in. wall of Sussex bricks will not, may be correct—he has special experience in Sussex; but brick with rough-cast will surely do it as well and last much longer. We agree with Mr. Ridge as to there being no necessity, in country cottages built in couples, to carry the party-wall through the roof; we do not call it a necessity in semi-detached houses anywhere—the necessity is in long rows of town houses; and, as he said, unless it is carefully and rather expensively done, it leaves a weak place for rain leakage, "and wet is a more serious evil on the South Coast than fire." The only other point in the evidence of the architects that we will touch upon is Mr. Thackeray Turner's defence of the thatched roof. As far as the pleasant appearance of the thatched roof in a country landscape is concerned, which seems to be the real motive of his defence of it, of course everyone will agree with him; but to maintain that it is a better roof in a practical sense than a tiled one (corrugated iron is so odious a material that we prefer to say nothing about it) seems rather like special pleading. Thatched roof is now illegal in new buildings under by-laws, and we think rightly so. It looks picturesque, but it is a clumsy way of roofing, and affords any amount of harbour for insects. Country houses, happily, are not infested by the insect horrors which beset town houses; but even what may be called "clean insects" may be a nuisance in a house, and for this as well as other reasons thatched roofing is rightly regarded as out of date.

The best advice on this subject of the materials of the cottage is to be found in the summary at the close of Mr. Aldwinckle's paper read at the Sanitary Institute. It is an eminently practical paper, and it is that of an architect who has no special theory or prejudice to influence him. He answers the allegation that many old cottages of wood were very comfortable by pointing out that they had small windows, seldom opened, and no attempt at ventilation; nowadays the importance of ventilation and light are acknowledged, and a cottage of thin external walls of whatever material, with large windows, could not be kept warm in winter without a great expenditure of fuel. "As to durability," he adds, "it must be obvious that walls of timber framing or very thin slabs of plaster on concrete cannot be considered permanent in the true sense of the word, nor the class of construction on which money could be borrowed." That is the sound common sense of the matter. The experience of the Letchworth exhibition, impartially considered, really brings us back to the brick or concrete cottage; in either case with rough-cast coating; and we may say, brick by preference. The various experiments in timber, timber and plaster, and various forms of what may be termed skin construction, may do very well for week-end cottages, but not as permanent property on an estate, nor as permanent dwellings for all seasons of the year.

The three conclusions left from the consideration of the evidence before us are therefore (1) that rural cottages must be of solid and durable and not of perishable materials; (2) that by-laws on main points of construction are a necessity, and that their existence, even in spite of some inconvenience or apparent injustice in their application, has been in the main beneficial and has already tended to raise the standard of rural building; and (3) that it is nevertheless desirable to allow of some elasticity in their application, under special circumstances, and that this would be best attained by allowing local authorities powers to grant exemption subject to a reference to, and the approval of, the Local Government Board.

* The italics are ours.

Shop Lighting in Oxford-street.—The Marylebone Borough Council, having now completed a system of public lighting in the district, have issued an order for the removal of all private lamp-posts in front of the shops in Oxford-street. Though the standard-lamps contribute to the lighting of the shops and of the thoroughfare during business hours, the Council are of opinion that, in view of the large increase of the pedestrian traffic, the private lamps should no longer remain, having become a source of inconvenience and obstruction to the public.

Blackfriars Bridge.—The Bridge House Estates Committee of the Corporation of London have approved of Sir Benjamin Baker's report recommending that the bridge should be widened by 30 ft. along its western side, and that new foundations should be laid in the bed of the river in view of the increased load the structure would then be required to sustain. The measure which the Corporation accordingly intend to introduce in Parliament provides for the construction of a double-line tramway from near Upper Ground-street on the Surrey side to John Carpenter-street, Victoria-embankment, and having, across the bridge, a space of less than 9 ft. 6 in. between the outside of the footpath (west) and the nearest rail of the tramway.

NOTES.

The National Gallery.

The question of the purchase of the Rokeby Velasquez, as it is called, for the nation, has raised a side issue as to the management of the National Gallery: This institution is at present without a Director, and purchases for it are therefore in the hands of the Trustees. This state of things has caused a demand to be made for the appointment of a new Director, who is to be a "professional"; by a "professional" is to be understood one who has made art, whether as a painter or otherwise, a means of livelihood. But the subject is discussed without sufficient notice of two main points, namely, that the Director should be some one whose whole time can be given to the affairs of the Gallery; and next, that he must be competent for the post. The mere fact that a man has painted pictures ought not to be regarded as a test—special training and individual capacity are essential. But it seems to be clear that there should be a Director as well as a body of Trustees. It has, however, to be borne in mind that the Treasury hold the purse-strings, and in relation to this part of the question it seems to be worth consideration whether it would not be better for the authorities of the Gallery to ask the Treasury for special grants when a picture can be bought, rather than to keep in existence a small annual grant—not enough for the purchase of important works, and which tends to the buying of small pictures. Perhaps the most necessary point of all is to get the Treasury to understand that great works of Art are of some consequence to the nation, and are worth paying for; but we fear that is a hopeless undertaking.

Electric Supply for London.

One of the most interesting problems which have arisen in connexion with electric supply is the question of determining who is to have the privilege of supplying London with electricity in bulk. We have never thought much of the claims of the Administrative County of London Company. The London County Council scheme has many points in its favour, but the Council is hampered by its financial position, as the capital expenditure on tramways for the next two or three years will be very large. It is therefore advisable to consider the proposals of a new company who are seeking Parliamentary powers to carry out a novel scheme of electric supply. The Additional Electric Supply Company of London propose to build a power-house on the River Ouse, near St. Neots, on the boundary-line between the counties of Bedford and Cambridge. The electric power generated will be conveyed by overhead wires a distance of about 40 miles, at a pressure of 25,000 volts, to Enfield, and from this place it will be transmitted to various parts of London. The price at which the company will sell electricity is about ¼d. per unit, and it is hoped that when a good "load factor" is obtained the price may be reduced in certain cases to ⅛d. per unit. It will be seen that this is a very substantial reduction in price to the prices quoted by the supply companies seeking Parliamentary powers last session, and

the question arises, is it possible to do it at this price? The company claim that they have exceptional facilities for procuring coal from the Nottinghamshire and Derbyshire mines at an average cost of about 6s. a ton. They have no heavy rents to pay, and the Great Northern Railway will grant them wayleaves. If their estimates stand examination, and they certainly have made out a *primâ facie* case, we think that this company has a strong claim to favourable consideration. Cheap electric power will be a great boon, and it will be easy to insert clauses in their provisional order to safeguard the rights of municipalities and also to prevent a monopoly of supply being obtained. Overhead power transmission wires by the side of a railway line are not beautiful. We fail to see why the cost of using underground mains should be prohibitive. At present cable manufacturers in this country, when judging the thickness of the insulation required for high-pressure cables, proceed by rules which have no scientific basis. We would suggest that the "factors of safety" required for the underground cables could be considerably lowered, since the stress on the dielectric can now be accurately calculated, and French engineers have proved that spark-gap safety-valves are thoroughly trustworthy.

The Purchase of Gowbarrow Fell.

WE should like to draw the attention of our readers to the report on another page of the meeting, on Thursday last week, of the National Trust, held with the special object of promoting the raising of funds for the purchasing, for public enjoyment for ever, of the estate of Gowbarrow Fell, on the banks of Ullswater, which otherwise will probably sooner or later be sold for building on. The purchase is to include the lake shore and the lake bed for a certain distance out, so as to give a right of landing. The estate includes the fine waterfall known as Aira Force. By the report of the proceedings it will be seen that only a small proportion of the purchase money remains to be raised, but the offer for sale to the Trust closes on January 1. It would be a thousand pities that an effort to save a fine piece of country and the shore of a lovely lake from the builder should be frustrated for want of the comparatively small sum now required to make up the purchase; and we hope that those who can afford anything in such a cause will send in their cheques to the Secretary of the National Trust, before it is too late.

Kingsway and Aldwych.

MR. RICHARDSON EVANS, the Hon. Secretary of the Society for Checking the Abuses of Public Advertising, makes an appeal in the *Times*, with which we are entirely in sympathy, that some endeavour should be made, at the outset, to prevent the architecture of the new streets from being defaced, and whatever merits it may have rendered nugatory, by the disfigurement of advertisement lettering and placarding on a large scale. The architects, as he says, may do their best, but it rests at present entirely with the tenants whether the new streets shall or shall not retain any architectural appearance. "It is not merely that the particular structure which bears the emblems ceases to be pleasing: the character of the whole avenue is affected." Mr. Evans suggests that if the public authorities as landlords were to insert a clause in the leases containing definite restrictions on this point, the mischief could be prevented from developing at the outset. It is certainly high time that some restrictive measure of this kind should be adopted, if we are to have any architectural dignity left in our streets.

Unlawful Picketing.

A USEFUL and interesting example of the limit allowed by law for what is called picketing was given in a case before the Court of Appeal on Monday last. Some French polishers were discharged by Messrs. Thomas Wallis & Co., Ltd., because they would not accept a reduction of their wages. With the results of the dispute we are not concerned. Then the Union, in this case the United French Polishers' London Society, sent men to walk up and down before the place of business of T. Wallis & Co., a large general shop in Holborn, with cards in their hats, on which the word "Picket" appeared, and a statement that the men were on strike against a reduction of wages. In the Vacation an injunction was obtained against this action, and the Court of Appeal has now held that it was rightly granted, on the ground that the action of the Union was "wrongfully watching and besetting a house" under the meaning of the Conspiracy and Protection of Property Act, 1875, and was not something done "in order merely to obtain or communicate information." Each case must depend more or less on its own special facts, and therefore this decision is illustrative only of a principle, but it is an illustration which tends to illumination.

Rights under Building Schemes.

THE recent case of Whitehouse *v.* Hugh raised one or two interesting questions. The action was brought by the owner of certain land and a house against the defendant for depriving him of a road which bounded one side of his property, and for building thereon in such a way as would obstruct the light and air to the plaintiff's house. Both plaintiff and defendant had derived their title from a certain freehold land society. The road in question had been merely an occupation road leading down to the railway line, which was crossed by a level-crossing, and then led to some meadows. In 1894 the land society had purchased these meadows and released the railway company from maintaining the level-crossing, and the road then was blocked at the railway line by railings. On the original conveyance made by the land society this road was not figured on the plan, but appeared as "vacant space," and the building scheme contained powers to vary the plans and conditions. The Court held that even had the road been shown on the plans, that alone would not have sufficed to support the claim, but that as it was only shown as "vacant space" it fell within the powers given to the society to vary the scheme. The plaintiff contended that it had been dedicated to the public, but this contention also failed, as there was no evidence of dedication, and a dedication by user could not be inferred in the case of a *cul de sac*, this latter proposition having been laid down in the celebrated Stonehenge case. As regards the obstruction to light, the Court followed the recent decision in Higgins *v.* Betts, and, applying the test as to how much light would be left, held that it would be sufficient for the comfortable enjoyment of the house.

What is a "Factory"?

ONE of the Metropolitan Police magistrates has had to decide a difficult question under the Factory and Workshop Act, 1901. A summons was taken out by the Government Inspector against the Kensington Borough Council for a breach of the Factory Act in not fencing a planing machine. Amongst other operations carried on in the workshop certain iron bars were bent and drilled to make tyres for the carts of the Council. The provisions as to fencing machinery are contained in sect. 10 of the Act, and apply in "factories," and it was contended that the above operation rendered these premises a factory under sect. 149, because mechanical power was being used on the premises "by way of trade or for purposes of gain in or incidental to the making of any article, or part of any article, or the alteration, repairing, ornamenting, or finishing any article." The magistrate, while commenting upon the slender evidence brought before him on a complex question of law, intimated that although he considered the labour here was not exercised "by way of trade or for purposes of gain," yet the premises were used "for the making" of an article, since the metal was converted into an article different to what it was before, *i.e.*, tyres for carts. In the case of Nash *v.* Hollinshead, decided by the Court of Appeal in 1901, where it was contended a farmer grinding meal as food for his own stock by machinery was the occupier of a factory, and therefore within the Workmen's Compensation Act, the Court intimated that the words "by way of trade or for purposes of gain" governed the rest of the definition. It would appear that this decision was not brought to the notice of the magistrate, as it would render the two findings inconsistent in this case.

A Building Lease.

A CURIOUS question has arisen in the case of Molyneux *v.* Prichard under a building agreement. The defendant was lessee of certain land which contained a covenant that, within three years he should build seven dwelling-houses upon it "similar to the dwelling-houses already erected in Percy-street." This lease contained a reservation of the mines and minerals, with power to work the same without leaving any support for buildings which might be erected on the land. Shortly before the defendant had entered into this lease he had also taken a lease with power to work these minerals, etc. The owner of the freehold had mortgaged

these lands, and the action was brought by the mortgagees for specific performance to compel the defendant to build the houses. The Court held that the power contained in the lease relating to the minerals, which also contained powers to cover the surface of the land with pit hills and spoil banks, did not extinguish the covenant to build the houses, although the judge said he would not decide whether the lessee had power to pull down the houses when they were built, and he granted specific performance of the contract. It was also contended that the character of the houses to be built was not sufficiently clearly specified by the words "similar to the dwelling-houses already erected in Percy-street" to enable specific performance to be granted; but this contention was also negatived. We can only again point out the danger of entering into contracts which contain inconsistent terms, as so many persons are apt to do, trusting that all will come right in the end. In this case no doubt the matter could have been arranged between the parties directly interested in the land and the lessee, but the action was by mortgagees, who were entitled to the security for their money which the leases gave them, and this security the Court held could not in this case be obtained by giving damages for the breach, and the defendant is thus placed in an anomalous position.

River Pollution.

MANY people in this country still believe that rivers and streams are conduits intended by Providence for the economical disposal of sewage. The work of those authorities who have to fight against the continuance of this mistaken notion is certainly not rendered more easy by the fact that it seems to receive the active support of the Army Council—an important body representing the Crown. The Thames Conservancy Board deserve credit for the energetic course taken with regard to the insanitary condition of the effluent from various establishments of the Council on the banks of the Thames and its tributaries, and, although the argument has been put forward that the notices served are inoperative against the Crown, we are glad to find that, as soon as funds are available, remedial measures are to be adopted at Tilbury, Coalhouse, Cliffe, and Shornmead Forts. An additional filtration area has been brought into operation at Bordon Camp, whence effluent is discharged into the river Wey, but, as pollution continues in spite of repeated warnings, the Conservancy Board have decided to take legal proceedings against the military authorities. This decision is entirely to be commended, for it appears that the Army Council are the worst offenders with whom the Conservancy have to deal. Moreover, instead of setting a good example, they stand forth as breakers of the laws made in the interests of public health.

Rivers Pollution Again.

AT the last meeting of the Metropolitan Water Board discussion was raised upon a particularly scandalous violation of regulations necessary for the health of London. The question was brought forward in a Report by the Finance Committee relative to new works proposed in the Lea Valley at an estimated cost of 685,000*l*. The Committee reported that the river, as a source of water supply, had suffered severely by the discharge of refuse from the War Office gunpowder works at Waltham Abbey. It is, indeed, a most unfortunate thing that the Government should have established this factory on the banks of the river, without taking any effective measures for guarding against pollution of the water which furnishes one-fourth of the entire water supply of the metropolis. As we pointed out in the previous note, and on other occasions, the representatives of the Crown have a most unfortunate predilection for setting bad examples to less privileged bodies and individuals. We are aware that the condition of the Lea is not improved by the effluent from the sewage purification works of the local authorities. The action of these bodies, however, is less blameworthy than that of the Government, for in one case it is difficult to avoid the discharge of more or less unsavoury effluent into the river except at very heavy outlay; while in the other it was perfectly unnecessary for the powder factory to be established on a manifestly undesirable site. Under the circumstances, the only effective remedy is to provide independent means of drainage for the local authorities and the Government works, so that the River Lea shall cease to be a source of danger to the inhabitants of the metropolis. A scheme of the kind was formulated some time ago by the Lea Conservancy, and we understand that the War Department will be asked to make a contribution towards the cost and maintenance of the proposed works—a suggestion which they ought to fall in with, if only as some amends for their past want of consideration for the welfare of the public.

Theatre Fire Tests.

A SERIES of interesting experiments was made last week in the model theatre built in Vienna for the scientific study of fires in theatres. The building, for the erection of which the necessary funds were largely provided by the Municipality and the Imperial Government, is of fire-resisting construction with an iron curtain between the stage and the auditorium, and has a water reservoir over the stage. One novel feature is to be found in the provision of several flues affording direct egress through the roof of the stage for air and the products of combustion. The company assembled in the auditorium included the Minister of the Interior and a number of architects and fire experts, who were able to witness in perfect comfort the effect of fires lighted on the stage. Two preliminary trials were made with the flues closed. In the first of these, with the curtain up, the combustibles used filled the auditorium with dense masses of stifling fumes; and in the second, with the curtain down, the protective metal screen was buckled by the heat and flames burst through. These tests were presumably made before the spectators had taken their seats, and they were followed by two other tests with the flues open. The effect in each case was that the smoke and heated air passed away through the stage roof, even when the curtain was up, without inconvenience to those in the body of the building. Clearly the device is as rational as it is simple—characteristics that are quite sufficient to account for the fact that it has not been tried before.

An Unusual Method of Weir Construction.

A SCHEME recently devised for the construction of a submerged weir in the Niagara River is distinctly novel. The weir was designed to increase the head of water at the intake of the power plant of the International Railway Co., but, owing to the extremely rapid current of the river and the unknown depth of the water, it was not possible to follow ordinary methods of construction. Therefore it was decided to construct the weir by overturning a tower of concrete blocks to be built upon the bank of the river. Timber framework 15 ft. high was first erected at the water's edge in such a way that it could be tipped over into the river by means of timber levers fixed at the base. Upon this frame a tower, 7·35 ft. square and 50 ft. high, is in course of construction, consisting of six concrete blocks, one at the base 10 ft. high, and the other five 8 ft. high each. These blocks are separated by tarred paper, preventing adhesion between the successive sections of the obelisk. The blocks, however, are connected by cast iron dowels, 12 in. long by 2 in. diam., and also by a 1½-in. chain. The chain is attached so as to allow a few links between each pair of blocks to be tucked into a horizontal slot at the joint. The object of these arrangements is that when the tower is in the act of falling the blocks shall be held together simply by their own weight and by the dowels, and that when the structure strikes the bottom the breakage of the dowels shall allow the blocks to adjust themselves to the contour of the river bed, while at the same time the chain will prevent them from separating for more than the predetermined limit, thus maintaining the continuity of the line. Owing to lack of data as to the depth of water, it is not yet certain whether one tower will be sufficient to secure the desired result. If not, two more towers will be tipped into the stream, one of these to lie alongside the first, and the other upon the top of the first two. This system of construction is an interesting example of the ingenious devices which engineers often have to adopt for surmounting difficulties of exceptional character.

St. Lawrence Bridge, Quebec.

THE world is getting so accustomed to engineering works of great magnitude that very little attention is attracted by undertakings that a few years ago would have been regarded as "wonders of the world," and whose progress would have been followed with intense interest from beginning to end. Probably this condition of satiety is the reason why the great cantilever bridge now in course of construction across the St. Lawrence River at Quebec has received so little notice. The completed structure will include the longest single span ever erected, the length being 1,800 ft., or nearly 100 ft. longer than either river

span of the Forth Bridge. Briefly described, the bridge consists of (1) two double cantilevers each with a shore arm 500 ft. long and a river arm 562 ft. 6 in. long, between which is (2) a suspended girder 675 ft. long by 130 ft. deep, and (3) two land girder spans each of 214 ft., making a total length of 3,228 ft. The cantilever towers rise to the height of 315 ft., and at the portals to the centre span the height is nearly 100 ft., while the clear headway for navigation is 150 ft. at high water. The width of the bridge is 75 ft., and accommodation will be given for two railway and two tramway tracks, two carriage roads, and two footwalks. In some respects this magnificent structure embodies improvements upon the Forth Bridge, particularly in the employment of standard rolled sections of steel for the cantilever towers, which will include a system of braced columns instead of the 12-ft. diameter tubes used by Sir John Fowler and Sir Benjamin Baker. Further, in consequence of modified views on the question of wind pressure, the towers will be vertical instead of inclined, and the general results will be considerable reduction of cost and far more graceful appearance. Of course, it is generally possible to improve upon first ventures such as the Forth Bridge, and in the present case the process is undoubtedly aided by the availability of far heavier sections of steel than were produced by rolling mills at the time the former bridge was designed.

Proposed Circular Garden City.

WE have seen a plan of a Garden City proposed to be laid out (from the plans of Mr. Beddoe Rees) a few miles from Cardiff, on an estate belonging to Mr. John Cory, in which the whole lines of buildings and roads are laid out in concentric circles, with five main roads radiating from the centre. The smallest circle in the centre is apparently to be occupied by blocks of shops, around a circular village green. We do not think the plan a good one. It is a kind of scheme which looks charmingly symmetrical on paper, but is not convenient in practice. Houses which are built on a similar plan will not have the light best for the rooms in all situations; the central shops will have awkwardly shaped plans; and the village green will be very much closed in, instead of being open and airy. The symmetrical plan, which pleases on paper, is not really taken in by the eye in execution. The plan seems to have been decided on, but it is not one that we should recommend.

Princess's Theatre, Oxford-street.

IT is announced that the Princess's Theatre, which has been closed during some while past, is shortly to be rebuilt for the new lessee. At a projected sale by auction in 1897 the property, being then held under a lease, to expire in July, 1940, granted by the Duke of Portland's trustees at a ground rent of 1,600*l.* per annum, was withdrawn after a bid of 20,500*l.* The present house was erected in 1880 upon a site covering about 21,500 ft. superficial, and extending to Castle-street East in the rear, from plans and designs by C. J. Phipps, who introduced what was at that time an unwonted feature of a London playhouse—the large apartment with a balcony above the chief entrance. The stage and wings measure 71 ft. in width by 42 ft. in depth; the auditorium affords seating-room for 2,150 persons. The first theatre was erected on the site of the Queen's Bazaar, which was rebuilt after a fire in 1829 for the "Physiorama" and other exhibitions. The house was then remodelled by Nelson and decorated by Crace in the Renaissance manner for Hamlet, the silversmith of Cranbourne-street, for opera in English and the then novelty of promenade concerts. The playbill of the opening night, October 6, 1840, stated that Queen Victoria had given permission, before her accession, that the theatre should be named the "Princess's." The chronicles of the Princess's Theatre comprise the performances of Macready, and, under Charles Kean's management, the production of the French drama with Kean's memorable revivals, some fifty years ago, of Shakespeare's comedies and historical plays.

Meux & Co.'s Brewery, London.

WITH the contemplated sale of the premises and site of the Horseshoe Brewery, at the corner of New Oxford-street and Tottenham Court-road, and the erection of new premises elsewhere will, it seems probable, disappear the last of the old breweries in that quarter of the town. Some of our readers may recall to mind the adjacent Star Brewery, situated on the west side of the Oxford Music-hall, of which the yard-gates in Oxford-street were faithfully guarded by two aged and implacable ravens. The Star Brewery gave way to the Bodega wine stores, subsequently rebuilt as a well-known restaurant. In Horwood's large-scale survey of London, 1795-9, are plotted a "Brewery" on the north side, at the east end, of Broad-street, in the parish of St. George, Bloomsbury, and "Stevenson's Brewery," between Bainbridge and Great Russell streets, in the parish of St. Giles-in-the-Fields; the latter since became the Horseshoe Brewery. In 1888 Meux's Brewery Co., Ltd., was formed to take over the business of Meux & Co., the freehold of the premises we mention being valued at 150,000*l.*, and their site extending over 70,000 ft. superficial. Horwood's survey of the locality is reproduced in our number of July 2, 1904, fig. 3, p. 13.

The Carfax Gallery.

AT Messrs. Carfax & Co.'s Gallery in Bury-street is an exhibition of water-colours by Mr. Arthur Ponsonby and Mrs. J. E. Talbot. The latter include some good landscape sketches, such as "Sun and Showers" (31) and "Ben Hope" (43), but are not as a collection remarkable. Mr. Ponsonby's drawings have a very distinct note; they are a revival of an old style of water-colour, going back to the days of Girtin, and making believe that the water-colour artist has no palette but a collection of browns and greys. The drawings include a good many more or less architectural subjects, with the buildings drawn in the prim naïve manner of the period imitated. In their way they are very clever, and some of the small landscapes are admirable compositions. It is an imitation, but an interesting one.

LETTER FROM PARIS.

THERE is a great rivalry in the artistic world for the succession to the place occupied in the Académie des Beaux-Arts by the late M. Bouguereau. At present the contest has only gone so far as the arrangement of the most favoured candidates *en ligne*, as follows: 1st, M. François Flameng; 2nd, M. Lhermitte; 3rd, M. Tony Robert-Fleury; 4th, M. Gervex; 5th, M. Besnard. Among the unplaced candidates are MM. Toudouze, Gabriel Fevrier, Chartran, Friant, and Albert Maignan.

At the same sitting, the Académie had the satisfaction of learning that the fine hôtel of Thiers, built in the Place St. Georges from the designs of Aldrophe, had been presented to the Institut by the present owner, in order to form an addition to the Bibliothèque Mazarin, which is no longer large enough for the demands on its space.

On Saturday last there was held, at the Ecole des Beaux-Arts, the first exhibition of the Departmental, National, District, and Municipal Schools of Fine Art and Applied Art. Forty-eight schools were represented at this interesting exhibition, the credit of instituting which is due to M. Dujardin Beaumetz, the Under-Secretary of State for Art, and which will be likely to have no little influence on the future of instruction in decorative art in France. Among the exhibits were to be noticed the anatomical drawings from the schools of Orléans and Douai, wood carvings from Bourges, paintings from Lyons and Bordeaux, textiles from Roubaix, etc. The works will remain here till the 12th, after which those which have received prizes will be lent for exhibition to any city which asks for them.

The competition in decorative design has just been adjudged at the Ecole des Beaux-Arts. The subject was "A Fountain." M. Emile Thomas, a pupil of M. Laloux, obtained a First Medal in the competition.

The Monument to the French Aeronauts (the last work of the late eminent sculptor Bartholdi), after having been successively proposed for the Square St. Pierre at Montmartre, the Place Pigelle, and the Place Blanche, is in the end to be erected at the Porte des Ternes at Neuilly. The monument, which will be inaugurated, it is expected, in the course of this month, is composed of a pedestal supporting an allegorical group, above which rises a balloon to which the aeronauts are clinging. Among the allegorical group one figure represents the City of Paris, as if fainting with exhaustion; others are dying soldiers, children defending their mother, etc.

A new gallery is shortly to be opened at the Louvre, next to the Egyptian gallery, in which will be exhibited the statuettes, rings, ornaments, toilet objects, etc., which M. Gayet brought back from his excavations at Arsinoë. Added to this collection is an instructive series of illustrations of the rites of the worship of Isis and of the successive incarnations of Osiris.

At the Petit Palais the gallery devoted to the works of Henner is shortly to be opened, and also a small room to be entirely occupied by the drawings of Daniel Vierge. The municipality have been exceedingly fortunate in the series of bequests of works of art which have been made to them, one result of which is that the Petit Palais will soon prove to be too small for all that it is desired to exhibit in it.

At the Musée de l'Armée has been installed a collection of portraits of Marshals of the First Empire created in 1804. All are there, with the exception of Murat, Soult, and Bernadotte. These portraits in oil have not all the same artistic value, but of their historic interest there is no question.

On the 4th and 5th there will take place, at the Georges Petit Gallery, the sale of the art-collection formed by the late M. Cronier. This sale will be one of the most important artistic events of the present year. The first day is to be occupied by the sale of ancient and modern pictures, and of drawings and engravings. This collection includes works by Fragonard, Nattier, Perronneau, Gainsborough, Reynolds, Romney, Lawrence, Watteau, Corot, Delacroix, Diaz, Troyon, Th. Rousseau, etc. The second day's sale will be devoted to furniture and *objets d'art* generally, among which are some fine tapestries of Gobelins and Beauvais, from designs by Boucher, Coypel, and Casanova.

M. Marqueste, the sculptor, has been commissioned to execute for the Panthéon a monument to the great orators and journalists of the Restoration. This monument, to be placed in one of the transepts, will include statues of Benjamin-Constant, Casimir-Perrier, Manuel, Paul-Louis Courrier, Armand Carrel, and Emile de Girardin. In the opposite transept will be placed a monument to the generals of the Revolution, which M. Mercié has been commissioned to carry out.

The Conseil Supérieur of the Ecole des Beaux-Arts has decided that the legacy of half a million francs recently left to the École by M. Wilman, a wealthy American, should be applied to the foundation of twelve travelling scholarships of 1,200 francs each, which are to be given, to assist in holiday travel, to three painters, three sculptors, four architects, and two engravers.

The death is announced, at the age of 78, of the eminent sculptor Gustave Crauk, a former Prix de Rome, and a pupil of Pradier. His first important work, the Greeks and the Trojans contending over the body of Patroclus, is in the museum at Valenciennes, his native town. He received medals in the Salons of 1857, 1859, 1861, 1863, and 1867; and received the distinction of the Legion of Honour in 1864, was created "Officier" in 1878, and "Commandeur" in 1903. Among his principal works are "Omphale"; "Bacchante et Satyre"; "St. Jean Baptiste"; "La Victoire" (in the Square des Arts et Métiers); the pediment sculpture at the manufactory of Sèvres; "Euterpe et Melpomene" (façade of the Tuileries); "La Prudence" (in the church of La Trinité); the tomb of Cardinal Dounet (cathedral of Bordeaux), besides numerous statues of well-known personages in artistic, official, and military society.

METROPOLITAN ASYLUMS BOARD.

THE usual fortnightly meeting of this Board was held on Saturday last week at the offices, Victoria-embankment.

Southern Hospital.—Among the correspondence received from the Local Government Board was a letter approving of the plan of the proposed new coal storage at this Institution, and sanctioning the expenditure of 350*l.* on the work.

Bacteriological Laboratories, etc.—It was agreed that the commission to be paid to Messrs. T. W. Aldwinckle & Son, the architects for this work, should be at the rate of 5 per cent. on the total cost of the work.

Joyce Green Hospital.—Messrs. W. H. Barber & Son were appointed to measure up the variations on Messrs. W. Smith & Son's contract for the erection of additional buildings at this hospital, at a commission of 1½ per cent. on additions, and 1 per cent. on omissions.

Millfield.—The Works Committee reported having issued an order on the contractors, Messrs. J. Linfield & Sons, for work at this home to cost about 200*l.* The total amount of the contract is 2,820*l.*

Park Hospital.—It was agreed to apply to the Local Government Board for an order sanctioning the expenditure of 261*l.* on additional work in respect of the re-setting of the boilers and repair of the foundations at this hospital. The work has been completed.

Milan International Exhibition.—In response to a letter from the Hon. Executive Commissioner of the British Commission for the Milan International Exhibition, 1906, the Statistical Committee were empowered to arrange for placing in the Exhibition an exhibit illustrative of certain parts of the Board's work, and it was agreed to apply to the Local Government Board for sanction to a reasonable expenditure for that purpose.

THE LATE COLONEL STANLEY BIRD.—Many of the friends of the late Colonel Stanley Bird desire that there should be some permanent memorial of him, in recognition of his services to the building trade; and as he was much interested in the work done at St. Mary's Hospital, and for some years occupied the position of Chairman of the House Committee there, it has been suggested that the endowment of a cot in that institution, costing 500*l.*, or something of a similar nature, would be a suitable form for such a memorial to take. Already about 140*l.* has been promised, and an appeal has been issued for subscriptions. The late Colonel Bird was a well-known and respected member of the building trade, and the proposal to perpetuate his memory in this way will, we hope, meet with the hearty response of his many friends. The appeal is signed by Messrs. Benjamin I. Greenwood, President of the Builders' Institute; Frederick Higgs, President of the London Master Builders' Association; William Shepherd, President, National Federated Building Trade, England; and Thos. F. Rider, Chairman of the Builders' Accident Insurance Company.

FURTHER NOTES ON THE LONDON BUILDING ACTS (AMENDMENT) ACT, 1905.

IT is, we think, not altogether unlikely that the analysis of the London Building Acts (Amendment) Act, 1905, which appeared in our issue of November 18, will have come as a more or less unpleasant surprise to not a few architects who have, during the last decade, made themselves familiar with the complex rules of the old Act, and to whom the retrospective and prospective action of the new Act may appear almost bewildering in its all-embracing inclusiveness.

These further notes may, therefore, be of assistance to those who will, in the course of the next few months, find themselves called upon to revise their hardly-acquired knowledge of the building regulations of London by the light of a Statute which, with one or two exceptions in favour of existing buildings, will come into operation on January 1 next.

NEW BUILDINGS AFFECTED ON JANUARY 1, 1906.

The "new building" of the new Act may be described as a building which, drawn on paper to-day in plan elevation and section, will not have been begun "*bonâ fide* and substantially," to be erected above the footings on January 1, 1906.

But, seeing that from the drawings of to-day spring the buildings of to-morrow, it follows that the architect who would faithfully serve his client must not only have a knowledge of the main features, but must also be familiar with the details of the requirements and procedure involved under the new Act.

Our readers will remember that there may be said to be six classes or groups of new buildings corresponding for practical purposes with the six classes of existing buildings, enumerated in the afore-mentioned analysis.

Taking the groups in their order:—

I. and II.—NEW BUILDINGS HAVING MORE THAN TWO STORIES ABOVE THE GROUND STORY, AND NEW BUILDINGS EXCEEDING 30 FT. IN HEIGHT (SECT. 12 OF THE NEW ACT).

Preliminary.—Ground story means "that story of a building to which there is an entrance from the outside on or near the level of the ground, and where there are two such stories, then the lower of the two; provided that no story of which the upper surface of the floor is more than 4 ft. below the level of the adjoining pavement shall be deemed to be the ground story" (sect. 5, subsect. 11, Act of 1894).

Height means "the measurement taken from the level of the footway (if any) immediately in front of the centre of the face of the building, or (where there is no such footway) from the level of the ground before excavation to the level of the top of the parapet, or, where there is no parapet, to the level of the top of the external wall, or (in the case of gabled buildings) to the base of the gable" (sect. 5, subsect. 21, Act of 1894).

Requirements.—(1) A parapet or guard-rail, where necessary, to prevent persons slipping off the roof, and either (*a*) a dormer window or door opening on to the roof, with proper access thereto; or (*b*) a copper—or zinc—covered trap-door, hinged and counterweighted, and a step-ladder leading to roof; or (*c*) other proper means of access to roof.

Exceptions.—(1) Power reserved to Council or (on appeal) to Tribunal of Appeal to sanction reasonable exemptions.

(2) New and existing high buildings are excepted from this sect. 12.

(3) New and existing twenty-person buildings ditto.

(4) Factories are exempt.

(5) Common lodging-houses ditto.

Procedure.—Obtain approval of District Surveyor to the position of dormer window, door, or trap-door required under this section.

NOTE.—It is to be observed that the same requirements and procedure will, on and after January 1, 1906, apply both to (A) existing buildings either having more than two stories above the ground story, or exceeding 30 ft. in height, *except* (1) a dwelling-house occupied as such by not more than two families, and (2) factories (see above), and (3) common lodging-houses (see above); and to (B) existing buildings in communication with shops projecting more than 7 ft. (without exception).

III.—PROJECTING SHOPS (BOTH NEW AND EXISTING) (SECT. 10 OF THE NEW ACT).

Preliminary.—Where a building is used or adapted to be used as a shop, and part of the building projects more than 7 ft. beyond the main* front of the building, then, with one exception (see below), the following is the requirement:—

Requirement (retrospective and prospective).—Projecting portion of shop to be provided with roof of fire-resisting materials not less than 5 in. thick.

NOTE.—Lantern lights or ventilating cowls may be constructed or placed in or upon such projecting fire-resisting roof, provided:—

(1) Such light or ventilator be not less than 6 ft. from main* front of building, and at reasonable distance from any other external or party-wall.

(2) Sides of light or ventilator (except side facing away from main building) to be carried up in fire-resisting material for 2 ft. above projecting roof.

(3) No part of light or ventilator to be more than 5 ft. high above projecting roof.

Procedure.—(1) Council may sanction whole or partial exemption of any projecting shop from provisions of sect. 10 "in any case where it is reasonable so to do."

(2) In event of appeal the Tribunal of Appeal may give such sanction.

Exception.—If no persons are employed or sleep in the building of which the projecting shop forms part, the fire-resisting roof is not required; the practical effect of this would seem to be to exclude lock-up shops from the operation of this section.

IV.—PREMISES (BOTH NEW AND EXISTING) USED FOR STORAGE OF INFLAMMABLE LIQUID (SECT. 11 OF THE NEW ACT).

Preliminary.—Sect. 11 of the new Act prohibits the use as a living-room, workshop, or workroom of any room constructed over, or communicating directly with any part of, a building used for the storage of petroleum,† or bi-sulphide of carbon or ether, or turpentine, or methylated spirit, "or any other inflammable liquid kept for sale or trade purposes in such quantities or in such manner as to cause fire or explosion," unless there be provided the following:—

Requirements (prospective and retrospective)—

(1) Adequate safeguards to prevent fire spreading to such living-room or workroom from the part where inflammable liquid is stored.

(2) Means of ready escape from such room in case of fire.

Exception.—Jurisdiction of the Corporation of the City of London under Petroleum Act, 1871, is safeguarded.

Procedure.—Owner may, if he think fit, appeal to the Tribunal of Appeal within two months of the Council making any requirements under this section of the new Act.

V. and VI.—HIGH BUILDINGS AND TWENTY-PERSON BUILDINGS (SECT. 7 OF THE NEW ACT).

Preliminary.—A high building may be described as a building having any story the floor surface of which is more than 50 ft. above the footway.

The phrase "twenty-person building" has been used as a short formula for expressing "a building in which sleeping accommodation is provided for more than twenty persons, or which is occupied or constructed, or adapted to be occupied, by more than twenty persons, or in which more than twenty persons are employed, or which is constructed or adapted for the employment therein of more than twenty persons."

Requirements.—New buildings of these two groups, V. and VI., must, on and after January 1, 1906, be provided "with all such means of escape therefrom in case of fire as can be reasonably required under the circumstances of each case.

* It is submitted that this would apply to projections at the back or sides, as well as in the front of the building.

† As defined by sect. 3 of the Petroleum Act, 1871, whether or not petroleum within the meaning of that Act.

*Exceptions.**—(*a*) A dwelling-house occupied as such by not more than one family is excepted from this provision, even though it be a high building, or a twenty-person building.

(*b*) Any building, the whole of which is a factory or workshop within the meaning of sect. 14 of the Factory and Workshop Act, 1901, is also excepted.

(*c*) Any common lodging-house, within the meaning of any Statute for the time being in force relating to common lodging-houses within London, is also excepted.

Procedure.—(1) Deposit at County Hall notice and sun-print copy of plans showing proposed means of escape; this notice and plans should be deposited before or at the same time as notice given to District Surveyor under sect. 145 of Act of 1894.

(2) Within one† month after deposit Council to give notice to applicant of either (*a*) refusal to approve; or (*b*) approval subject to conditions.

(3) Council failing within the time limited to give such notice, then "they shall be deemed to have approved such plans without conditions."

(4) Within two months of refusal or conditional grant by the Council, owner may, "if he think fit," appeal to the Tribunal of Appeal.

(5) Tribunal of Appeal may approve the plans.

(6) Give notice to the Council of completion of building.

(7) Council either to issue certificate or, within fourteen days, to refuse certificate.

(8) Appeal from refusal to issue certificate, as in (4).

(9) Occupation of upper stories in high building or any part of twenty-person building can only take place on issue of certificate.

NOTE.—The operation of the Act in regard to existing high buildings and existing twenty-person buildings is postponed until January 1, 1907 (see sect. 9 of the new Act).

GENERAL OBSERVATIONS.

CONVERSION.

It is to be noted that sect. 13 of the new Act prohibits the conversion (either by change of user or by structural alteration) of a building in such manner that, when converted, the building will not be in conformity with the provisions of the new Act.

Procedure.—(1) Owner or occupier to give notice to District Surveyor of intention to convert, even where no structural alteration but only change of user involved.

(2) Apply in writing to Council for consent to conversion.

(3) Council, within one month,† either to consent in writing, or to notify owner that consent is refused (giving reasons for such refusal).

(4) Owner may appeal to Tribunal of Appeal.

(5) Tribunal of Appeal may give consent.

(6) Owner must not knowingly or wilfully suffer any building when converted to be used or occupied without consent in writing of Council or Tribunal of Appeal.

THE TRIBUNAL OF APPEAL.

Constituted by sect. 175 of the Act of 1894, consists of three members—one member appointed by a Secretary of State, one member appointed by the Council of the Royal Institute of British Architects, one member appointed by the Council of the Surveyors' Institution.

Procedure.—The Tribunal have made regulations as to the procedure to be followed in cases of appeal and the fees to be paid, which regulations have been approved by the Lord Chancellor, in accordance with sect. 184 of the Act of 1894.

* It will be remembered that special exemptions are contained in sects. 28-42 (inclusive) of the new Act. Of these, the operation of sect. 34, subsect. 1, "as to banks and insurance offices," will be of more general application. The exempting clause runs as follows:—"Any new or existing building used or intended to be used to the extent of not less than three-fourths of its cubical extent as a bank or insurance office, or partly for one and partly for the other, of such purposes, by not more than two companies or firms, and used or intended to be used as regards the residue thereof only as a residence for or for providing sleeping accommodation for officers or servants of such companies or firms, shall, so long as such building is not used otherwise than as aforesaid, be exempt from the provisions of this Act."

† Two months during Long Vacation.

REPEAL.

The following provisions of the Act of 1894 have been repealed:—

Sect. 5, subsect. 36.—Definition of "fire-resisting material."

Sect. 61, subsect. 2.—Means of access to roof of building over 30 ft. high.

Sect. 63 (the whole section).—Means of escape at top of high buildings.

Second schedule.—The whole schedule of fire-resisting materials.

NOTE.—The new Act contains an amended and extended list of materials which, under the London Building Acts, 1894 to 1905, shall "be deemed to be fire-resisting materials." Perhaps the most important amendment is the reduction in thickness of hardwood doors and staircases from 2 in. minimum in the Act of 1894, to "1¾ in. finished thickness" in the new Act, whilst important additions are:—For general purposes, "any combination of concrete and steel or iron," and, in the case of glazing for windows, doors, and borrowed lights, lantern, or skylights, glass not less than ¼ in. thick in direct combination with metal of high-melting point in squares and panels of a limited size in fire-resisting frames of hardwood or of iron.

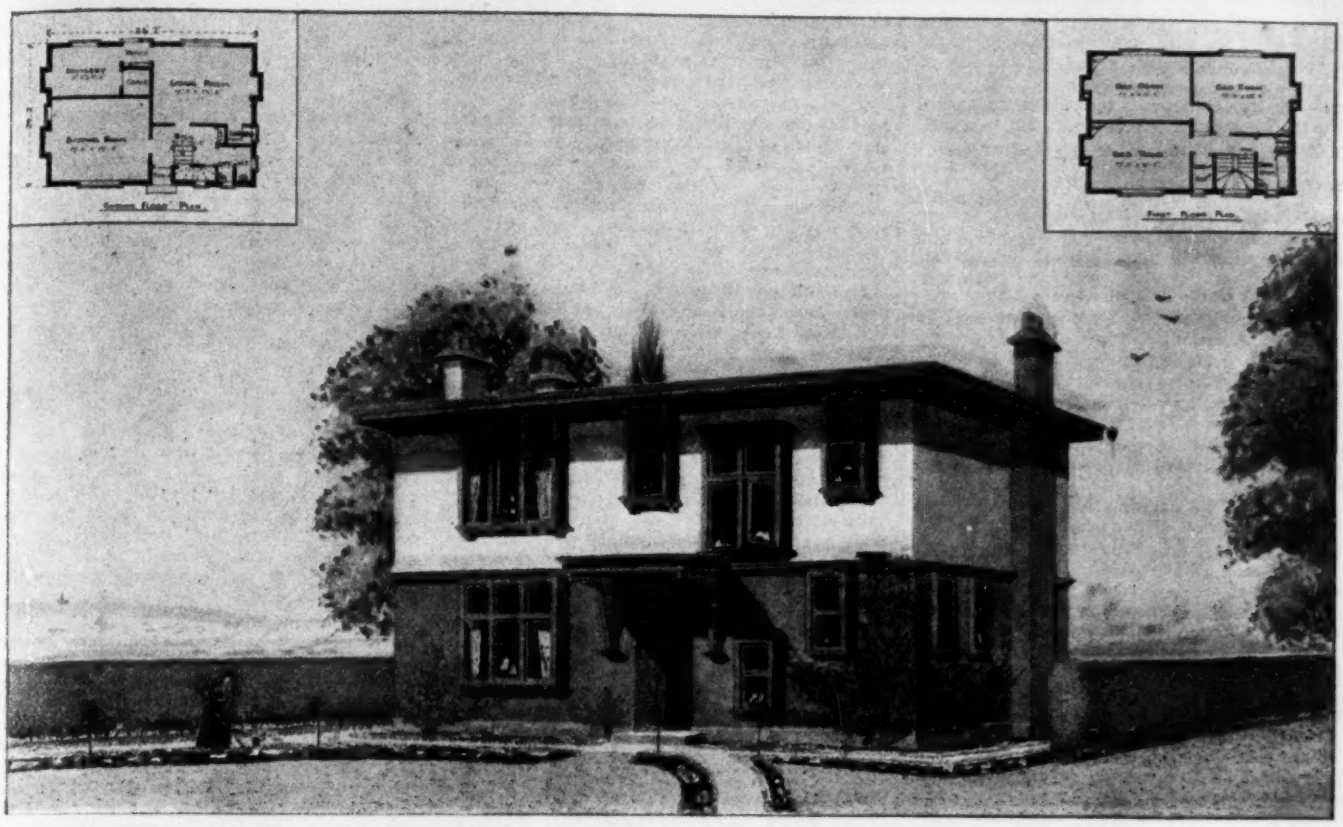
THE NATIONAL TRUST FOR PLACES OF HISTORIC INTEREST:

PRESERVATION OF GOWBARROW FELL.

ON Thursday afternoon in last week a meeting, called by the National Trust for Places of Historic Interest or Natural Beauty, was held at the United Service Institution, Whitehall, under the chairmanship of Sir Robert Hunter.

The Chairman said the meeting had been convened by the National Trust to urge upon the public generally the importance of enabling them to complete the purchase of Gowbarrow Fell and Aira Force on Ullswater, and the broad fact he had to mention was that they had received 10,300*l.* out of the total of 12,000*l.* required for the purchase, and he hoped that would in itself prove that the proposal had met with the general acceptance of the public. Still, they had to complete the purchase by the end of the year, and by that time he trusted they would be able to hand to Mr. Howard the full sum of 12,000*l.*, or be able to make a binding contract with him for the purchase of the site. Gowbarrow was pre-eminently a place of beauty, and it was impossible adequately to paint the attractions of such scenes as it possessed. All that one could do was to give the bare bones. They had at Gowbarrow every feature short of lofty mountains, which went to the constitution of a succession of lovely scenes. They had the bold fell, rising to a height of something like 1,400 ft. above Ullswater. They had a lovely glen, from which tumbled down to the lake the Aira, making a succession of waterfalls, and down the glen they had a charming and endless variety of combinations of wood and stream, while beyond was the lake. From the top of the fell they had distant views over a great part of the lake country. In the second place, Gowbarrow was easily accessible. It was within four miles of Troutbeck Station, and was within easy carriage drive of Penrith, which was on the main line of the London and North-Western Railway. It was in the regular line of tourists to the Lake District. Not only was it accessible now, but in the natural course of events it would be more and more accessible as time went on, for motoring was now but in its infancy. Thirdly, he submitted very confidently that Gowbarrow was not costing too much. There had been some correspondence lately in the Press on the matter, and he would like to refer briefly to the subject. In all these cases too much importance could not be attached to buying before the land came into the building market. Where there was an urgent case for preserving land for the benefit of a great town there were local authorities endowed with powers by Parliament to effect that kind of purchase, but it was where local authorities were not prepared to step in that the action of such a body as theirs was of especial value. That was eminently the case with Gowbarrow, and it was just such a case as this that the National Trust was established to deal with. The purchase of Hindhead was a good example of what could be done, for the manorial rights there had been secured for a comparatively small sum, and the place had been preserved against any risk of encroachment. Another object of the Trust was to go into districts which were not in immediate danger of being built on, but which were of great beauty, and acquiring such districts for a comparatively moderate sum, and so preserving them for generations yet to come. If they waited in such cases until building was about to commence the cost of acquiring them would be greatly increased, and so it was of importance that they should be a little in advance, and buy places of this kind when they were not at too high a price. In this case Mr. Howard, who was a large landowner, offered, through Canon Rawnsley, the whole of Gowbarrow Fell and Aira Force, with Lyulphs Tower, for 18,000*l.*, and they took the advice of a competent surveyor in the district, who said the price was not too much. They felt, however, that the cost was a large sum to ask the public to subscribe, and so they asked what Mr. Howard would accept for the property without Lyulphs Tower, and they came to an agreement to leave the house and forty acres of land and pay 12,000*l.* for the remainder. They were buying 740 acres of land, and the magnificent fell, rising from the shores of the lake to some 1,500 ft. above the sea, and the Aira Force, one of the most noted waterfalls in the Lake District. He might mention that falls were not very safe, for the Falls of Foyer had been put into a pipe and taken away to make acetylene gas, and such a fate might be that of the Aira Force. Then they purchased the exquisitely beautiful glen, through which the stream fell to the lake; a large area of parkland, sloping from the higher parts of the fell to the high road which ran from Pooley Bridge to Pattendale; while beyond the road they got the verge of ground upon which Wordsworth saw his daffodils, and which gave access to the lake. If a private person were to buy that strip of land he could prevent landing from the lake to get to the road. They were also buying the bed of the lake to the extent of about one-half, which would get rid of the difficulty which had arisen in other places with regard to boating. Further, they purchased a landing-place for steamers, which would enable people to take boat at Aira Force and go over to the other side, which at present was almost inaccessible. The Lake District was a small one, and its mountains and lakes were on a very modest scale, and perhaps it was owing to its being so small that it was so exceptionally beautiful, because within a narrow compass they got great natural richness of growth and verdure and such combinations of wood and water. The fact that it was so small, and had such a refined beauty, made it all the more easy to spoil. It was eminently a district which the nation should possess, and were it situated in the United States no doubt it would be treated as Yellowstone Park was. That could not be done in this case, and so he appealed to them, by the voluntary efforts of the Society, to strengthen the hold of the nation upon the Lake District and preserve its loveliness intact for that large and ever-growing section of the community which found its keenest pleasure in the splendour and glory of creation.

Mr. Alfred Austin (Poet Laureate) moved:—"That this meeting warmly sympathises with the aim of the National Trust in trying to secure Gowbarrow Fell for preservation for the nation, and wishes to express its earnest hope that the balance of the purchase-money still required may be immediately forthcoming." He said that, notwithstanding his warm sympathy with the object, he hesitated to accept the invitation to come there and propose the resolution, firstly, because he felt he had no money-collecting or subscription-effecting power, and, secondly, because he knew that at present appeals were being made for the unemployed, and it might be said that this was an untimely occasion to appeal for funds for what some persons might describe as a prospective luxury rather than a pressing necessity. In answer to these causes of hesitation two reasons arose in his mind. In the first place, he had been pressed by Canon Rawnsley to come, and, in the second



Proposed Cottage at Letchworth, Herts. Messrs. Taperell & Haase, Architects.

place, the time left for the collection of the money was very short. He believed that now the fund amounted to 10,800*l*. His personal recollections of the district were amongst the most pleasant of his life. He remembered enjoying the hospitality of Lyulphs Tower, and on the morning after his arrival he saw the red deer looking into his bedroom window. His gracious hostess consulted him as to how a garden could be laid out round the house, and he advised her to make no garden there, but to leave the deer liberty to roam and browse as they had done for generations, for such a setting was worth all the gardens in the world. But he had a recollection which went still further back. It was at the time of an election turmoil, and he had been engaged in the strife, and then retired to Pattendale, and, "filled with peace which passed understanding," he contrasted it with the vapid discourses to which he had listened and which he had himself delivered, and when he heard the church bells chiming out their silvery notes he could not help exclaiming, "This is the truce of God." In the busy manufacturing north they must have the disagreeable commitants of large towns, and the residents desired to repair to the districts such as the Chairman had described. It was to such districts that men turned for comfort, consolation, and balm; and in no period of the world's history was this refuge so much required as now. Some took a very sanguine and optimistic view of what was called progress and material civilisation; some of them contemplated its results with less hopeful minds, but, at any rate, it was impressed upon all that it was attended by grave difficulties and by much human suffering. Let them repair, then, to Gowbarrow, which was to be purchased for them for all time, and listen to the music of its running streams and wander and ponder amongst its bracken-covered slopes.

Miss Octavia Hill seconded the motion, and said that the process of enclosure, perfectly legitimate and quite inevitable, was proceeding all over England, and at an accelerated pace the more the town populations took holidays; and the delightful sense of freedom which walking over unenclosed land gave was becoming rarer year by year. There was a deeply-seated human longing for beauty which needed to be met—they wanted to go to nature and feel the blue sky over them and drink in silence the beauty of Nature in calm and storm. The National Trust had taken as one branch of its work the satisfying of this great need. It had set itself to secure acres of special beauty here and there and preserved them, and they had secured such land in Cornwall, Wales, Kent, Surrey, Monmouthshire, Cumberland, and Cambridgeshire, and now they wanted the money to buy the largest area the Trust had yet attempted to secure. Could they readily imagine a more satisfactory gift to make to the nation than this land? Over 1,200 persons had subscribed, and in several cases groups of persons had subscribed as a memorial to some person. The purchase price worked out at 18*l*. an acre, and she knew of no way in which that money could be spent to do more lasting good.

Sir W. Lawson, in supporting the resolution, said he was not what was called an æsthetic man. He was delighted to see that the Poet Laureate a short time ago described the Derwentwater Lake as the most beautiful place in the world, and he had no hesitation in saying that Ullswater ran it a good second. He could not paint the lily himself, and was sorry that Canon Rawnsley was not present, because Canon Rawnsley, in a small way, was doing for Cumberland what Sir Walter Scott did for the Highlands a hundred years ago.

Mr. Nigel Bond, Secretary, read a letter which had been received from Canon Rawnsley, in the course of which he said:—"The work of the National Trust is too well known to need speaking about. Only in the present week a beautiful property in the South of England of 700 acres on Hindhead Hill and its surroundings has come to us to be cared for and safeguarded for the British people. The spirit that prompted the Surrey ladies and gentlemen in this wise and beneficent action to secure Hindhead and the Devil's Punch Bowl 'from rash assault' is the spirit of our Trust. You are asked to help us to make it possible for generations to feel that they have a right to a portion of the shore on Ullswater, to the glorious fell with its red deer and wild-bird life, to the mountain that, rising from the shore to a height of 1,500 ft. above sea level, gives one of the most magnificent prospects of lake and mountain in Cumberland, and the right, also, to one of the most bewitchingly beautiful glens and streams and waterfalls of the Aira Valley and Aira Force which remains to us in their virgin loveliness. Wordsworth, who knew it well 100 years ago, speaks enthusiastically of the way in which its naturally sown and grown woodland has been untouched by the woodman's axe, and what Wordsworth saw and felt we can see and feel to-day. I certainly know nothing more exquisite in well-wooded growth than the birches one passes under and the thorns one passes by as one descends from Dockwray to the Aira Force."

The resolution was carried, and a vote of thanks to the Chairman, proposed by the Dean of Carlisle and seconded by Mr. Temple (Guildhall Art Gallery), concluded the proceedings.

PROPOSED COTTAGE AT LETCHWORTH.

We give an illustration of this as an experiment in treating a cottage with a flat roof; a point to which we have already drawn attention in our review of the Letchworth exhibition of cottages.

The cottage was designed to meet the requirements for a cheap, substantial building to cost not more than 250*l*. The walls and partitions to be built with grooved Fletton bricks; the external walls to be rendered with cement and pebble dashing, the upper part coloured a light cream, and the lower a natural grey.

The woodwork is generally square or chamfered; the external woodwork stained a dark oak and varnished; the ground floor covered with cement-concrete 6 in. thick, floated to receive cork lino.

The roof is covered with three-ply Ruberoid, laid on 1 in. boarding; the eaves project 2 ft. all round the building. It was originally intended to have a battened and local tiled roof, but by the use of a flat a saving of 24*l*. 10*s*. was effected.

The height of the rooms is 8 ft. 6 in. in the clear. The cube of the building is 18,454 ft., measured from top of concrete foundations to top of flat. The contract price is 240*l*., which is 3¼*d*. per ft. cube. This price includes drainage and the house decorated and ready for occupation.

The builders are Messrs. W. & A. Cook. The architects are Messrs. Taperell & Haase, of London.

The flat roof is made with 7 in. by 2 in. joists covered with 1 in boarding and Ruberoid. A flat roof in concrete-steel was found too costly, though of course it would be more satisfactory otherwise.

The architects obtained the following results as to the cost of three different forms of roof for this house, which it may be of interest to give. The figures on the small plans in the corner of the illustration will give the area to be covered :—

	£	s.	d.
1. Batten and tile roof, pitch 45°, eaves projecting 1 ft. all round	66	3	9
2. Concrete and steel flat, covered with two layers of ¼-ply ruberoid	51	11	0
3. Wood flat boarding and 3-ply ruberoid, eaves projecting 2 ft. all round	42	14	4

PAVING OF ROADWAYS.

At a meeting of the Tramway and Light Railways Association, held on Thursday evening last week at the rooms of the Society of Arts, Mr. W. L. Green (Paving Manager of Millars' Karri & Jarrah Company, Ltd.), read a paper on "The Paving of Roadways." Mr. W. L. Green (Managing Director of the Metropolitan Electric Tramways, Ltd.) presided.

Mr. Green, in opening his subject, dealt with the famous ancient roads of Egypt, Greece, India, and Italy, and, coming to England, said that in 1285 the first Act of Parliament relating to roads was passed. He briefly referred to other Parliamentary measures passed till the time of Macadam, and remarked that although Macadam first adopted the system to English roadways, yet the idea of breaking stones had long been in use in Sweden, Switzerland, and other countries. The next development in road-making was effected by Telford, who laid out no less than 920 miles of roadway, and since his period there was little change in the manner and method of paving until they came to the time when modern requirements demanded qualities and conditions not previously insisted on. Tar-macadam was laid in Nottingham so far back as 1840, but the method of doing the work had been greatly improved. The advantages of tar-macadam over ordinary macadam, put briefly, were economy in upkeep, the insuring of a solid surface, the prevention of dust, and, consequently, mud, and increased facility of traffic. A new method of armouring macadam roads which was in use on the Continent was also worth consideration. It was first tried by Baurath Gravenhorst, of Strade, in the province of Hanover. He selected stones of approximately equal size and cubical shape, and placed them single, side by side, on the carefully-levelled and rolled surface of the old road. The result was a mosaic-like covering which proved to be of extraordinary durability. The next step was to increase the size of the stones, and the two sizes now in general use were 3½ in. by 4 in. and 4 in. to 4½ in. depth. The entire cost of paving the Wiesbaden roads on this system was 5s. per superficial metre. The essentials of a perfect paving for cities was that it must have a perfectly solid foundation, be non-absorbent, have a smooth and even surface offering the least resistance to traction, non-slippery, noiseless, durable, not subject to expansion or contraction, easily cleaned and repaired, and, lastly, it must have a pleasing appearance. This was, of course, an ideal which had never yet been attained, and he did not suppose it ever would be. The value of any form of paving was according to its suitability to the locality in which it was used, and to the traffic which had to pass over it. There were few, if any, materials which were capable of adaptation to every purpose, and there was no standardisation of paving materials by which one could make a selection for a special set of conditions. Asphalt was undoubtedly a fine pavement for level thoroughfares, and was impervious to moisture, and formed a very sanitary pavement. It was, however, particularly susceptible to climatic conditions. In all paving operations the foundation was the true roadway, and the surface was the veneer or cushion, whether it be of asphalt, hard-wood, softwood, or other material. To make a good asphalt carriage-way a proper foundation was as necessary as it was for any other material used for street paving. Mr. Green proceeded to quote the figures of Mr. Oxtoby, the Borough Engineer of Camberwell, as to the cost of asphalt. As regards first cost, mastic asphalt was the cheaper, but its life was not so long as when compressed. The London County Council would grant loans on it for seven years only. The compressed asphalt cost more in the first instance, for the London County Council granted loans for ten years on it, but it had been down in the City and Holborn, with heavy traffic, from seventeen to twenty years. Wood pavement was laid in front of the Old Bailey as early as 1839 on the Stead system, and following this came De Lisle's method, Carey's pavement, Improved Wood from the United States, the Lingo mineral pavement, asphaltic wood pavement, Benson's pavement, and Mowlem & Co.'s method. All of these employed wood blocks as the surface pavement. Pine was the wood used, but amongst the woods now in general use for paving were deal, pine, jarrah and karri, and blackbutt, the latter being a New South Wales wood. The two best Australian hardwoods, jarrah and karri, were now most widely used. As a rule 5-in. blocks were used, but from long experience he believed that 4 in. was sufficient, and, in some instances, 3½ in. The suggested saving in depth would make the paving considerably cheaper, and would not affect the wear. Blackbutt was not largely used in this country, and the slight loss in wear annually of this wood in the streets at Sydney he thought arose from the fact that the surface was treated once or twice each year with a dressing of distilled tar and sand—a method which he would strongly recommend in this country. For quietness, softwood stood before hardwood, and for safety both hard-wood and softwood came before asphalt. For ease of cleansing hardwood stood before softwood, and for traffic resistance the hard-wood must necessarily be first. The first cost of softwood was below that of hardwood, but when the question of maintenance was taken over a period the cost was greater than that of hardwood. But one of the most inportant matters in connexion with any paving was that of foundation, for a defective foundation meant a bad, irregular roadway, however excellent the paving used. Experience had shown that the best foundation was composed of cement-concrete, and it followed that the more perfectly this was done the longer the duration of the wood, granite, or asphalt veneer. But under this concrete roadway was another foundation, one of earth, which had frequently been disturbed for a considerable distance, and which, if not properly consolidated, would render all care afterwards of little avail, for the traffic followed the completed street so quickly that depressions must occur if this was not very well done. For wood paving it was imperative that the exact falls required should be given to the surface of the concrete, but for granite and asphalt this was not so important. There was a considerable difference of opinion as to the proper form of joints for wood paving. His own experience was that blocks should be laid as closely together as possible, consistent with the fact that sufficient space was allowed to ensure that the ⅛-in. pitch or cement grouting thoroughly penetrated the joints all round the blocks, thus providing a watertight surface. Blocks for close jointing, of course, needed special care in cutting, or they got rocking blocks.

Mr. Trier said Mr. Green had made some reference to the small setts which were now being used considerably on the Continent. This system of paving was started about ten years ago in Hanover by one of the county engineers there. Having experimented, this gentleman at last laid small setts in an irregular manner, like a mosaic, on the old macadam, and this was found to wear splendidly. He had seen roads in Hanover which had been down fifteen years, and they still looked very good. He admitted that the traffic was not such as they got in London, but, on the other hand, local lime and sandstone was used and not granite. The system was extending in Germany, and they were putting these small setts down in the streets of the German towns which were so famous for the beauty of their buildings and streets. Such setts had been put down on roads connecting large towns where the wear and tear of the macadam road necessitated the renewal of the macadam three times in two years, and they had found that this new paving paid for itself. One of the chief points in these, as with other setts, was that they should vary in depth. The usual sizes varied from 8 to 10 centimetres—the 8 centimetres were put by the abutments, the 9 centimetres in the crown, and the 10 centimetres at the sides. They also used this system of small setts in the side walks in Germany, but in these cases they did not use the deeper setts. They used those more like hand-broken macadam, which was not slippery, and looked very well. He had also seen them used in some of the squares, where they were utilised to make patterns. In Hamburg it was laid in different coloured granites, and made a very fine impression. He knew that they put these setts down between the tram lines on main tram routes, but just outside the rails they put larger setts, as they found the foundation was not good enough for the small setts. One of the essentials of this paving was that it should be well bound, and he might mention that if one drove over a piece of this paving next to the large setts the immediate decrease in the rattle and noise was very noticeable.

Mr. Percy Morris, speaking from the contractor's point of view and as one who had had large experience in paving, said he thought that jarrah was better wood for paving than karri. Mr. Green said that a great deal of the bad results was due to bad cement. Whether that was so in times past he did not know, but, nowadays, engineers and surveyors were so strict in their specifications that it was a mistake to put down any subsidence in the road to inferior cement. Mr. Green had said nothing about granite setts generally for paving, but he (the speaker), while admitting that in the centre of cities, owing to the noise, granite setts were not in such favour as they used to be, yet, even now, he believed they would admit that granite setts were the cheapest in the long run for paving. With regard to the paving of tramways he believed that tramway engineers would have much better results if they could give a little more time for the execution of their work.

Mr. Pott said it was not the tramway engineers who hurried the work, but the surveyors in whose districts the work was being done. He would like Mr. Green to give them his opinion of what was best for paving. Assuming that they had to use wood paving, as most tramway men were now driven to, he would like to know what his view was with regard to dealing with the margins. He would like to know what Mr. Green considered the life of hardwood laid under the very best conditions for tramway margins, and, further, what he would think would be a fair price for contractors to take up the maintenance of these 18-in. margins.

The Chairman said that tramway people felt that they were suffering under a grievance with regard to paving. When horse traction was the rule the damage was done by the horses' hoofs, and it was fair that the tramway company should maintain the roadway, but now electric cars only used the rails, and yet the tramway company had to pay for the road which was destroyed by the other traffic. While, however, the system remained they would seek to lay down that which cost least, and which could be most economically maintained. He would like to know how jarrah compared in cost and durability with granite, and how it was possible to ensure uniformity in hardness of wood paving. He would also like to hear something about what had been recently done on the Thames-embankment. He believed that tar-macadam was put down there, and he must say that travelling over it in a rubber-tyred carriage was very agreeable. He noticed that this was being removed, and took it as an indication that the whole thing had been a failure. He expected, however, that whatever was put down on the Embankment was doomed to failure because the shifting foundation was the cause of the mischief. Mr. Green had mentioned the use of wrought-iron in connexion with concrete, and he would like to know if he had considered the use of expanded metal in this connexion.

Mr. Green, in reply, said the statement that karri was better than jarrah came from the Agent-General for Western Australia, and was not his own statement. He did not mention granite setts in particular, for there were so many forms of paving, and if he had gone into all of them his address would have been too long. He agreed that sufficient time was not given for allowing the concrete to set properly, and this did not give whatever was placed on it a fair chance. Some time ago he passed through a road in London at seven in the morning and 2 in. or 3 in. of floating was being put on. At seven o'clock the next morning the blocks were

being put on it, and they could not be surprised that the pavement did not prove satisfactory, laid under such conditions. It must be remembered that the weight of the present-day tramway was about 12 tons, as compared with about 4 tons in the old days, and no one was yet able to gauge what the effect of these heavy tramcars was going to be on the paving and rails. He preferred not to answer the question put as to which was the best wood for paving, as he was connected with a wood-paving company. It was also impossible to say what a contractor ought to undertake the maintenance of margins for. All the traffic in a road seemed to go within an inch or two of the tram rail, and whatever paving might be there it had to suffer. With regard to the tar-macadam on the Embankment he did not think it would stand for long because he knew that the subsoil of the Embankment was a very difficult matter to deal with. He had not seen expanded metal applied for concrete trenches, but saw no reason why it should not answer. As far as regarded wood and granite for tramways, there was little in it so far as durability was concerned. The cost of granite in the first place, he believed, was rather heavier than wood, but there was no doubt but that the cost of maintenance was less. Uniformity of hardness in the wood could only be secured by close inspection and selection of the woods.

THE BUILDERS' BENEVOLENT INSTITUTION:

ANNUAL DINNER.

THE fifty-eighth annual dinner of the Builders' Benevolent Institution was held on Thursday last week in the Whitehall Rooms, Hotel Metropole, W.C., the President, Mr. B. Hannen, jun., presiding. There were also present, amongst others, Col. G. Haward Trollope, V.D., Major J. A. Thornhill, and Messrs. J. Aldwinkle, H. H. Bartlett, J. T. Bolding, E. J. Brown, E. J. Burr, C. Russell, J. Howard Colls, J. Carmichael, Stephen Collins, L.C.C., W. Downs, J. E. Dromer, L. R. Ensor, Basil P. Ellis, Benjamin I. Greenwood (President of the Institute of Builders), E. A. Gruning, Hy. Holloway, J.P., W. W. Howard, E. C. Hannen, F. Higgs, H. F. Higgs (President, London Master Builders' Association), W. Higgs, F. Hooper, H. T. Hare, J. Keith, Walter Lawrance (President, Quantity Surveyors' Association), J. W. Lorden, E. L. Lutyens, L. J. Maton, F. May, D. W. McInnes, G. M. Nicholson, Hy. Northcroft, Rowland Plumbe, A. E. Parker, J. F. Parker, A. N. Prentice, A. Rashleigh Phipps, T. F. Rider, A. Ritchie, J.P., T. Stirling, G. Sherrin, Howard W. Trollope, Howell J. Williams, L.C.C., and T. Costigan, secretary.

The loyal toasts having been honoured,

Mr. H. H. Bartlett proposed "The Imperial Forces," and in the course of his remarks he referred to the great works which contractors were continually carrying out for the Army and Navy—barracks, hospitals, harbours, docks, etc.—without which they could not do; and it was obvious, therefore, that, apart from all else, the building trades benefited from the existence of the Army and Navy.

Col. Haward Trollope, whose name was coupled with the toast, suitably replied.

The Chairman then proposed the toast of "The Builders' Benevolent Institution." He said that the number of men pensioners at the present time was thirty-three, and the women, thirty, and their average age was seventy-three years. Since the last report was issued three of the men pensioners had died, and, in the ordinary course of events, the widows will come on the funds of the charity. The elections were held in May and December, and it was the object of the Committee to try and avoid contested elections, for they entailed a great amount of trouble and expense to the charity as well as to the applicants. Each male pensioner receives 42*l.* per annum, and each woman 30*l.* a year, and in the case of death 5*l.* was given towards the burial expenses. The total amount received last year in subscriptions, donations, and interest was 2,159*l.*, and the total amount paid out in donations, 2,316*l.*, or 157*l.* to the bad. It was obvious that the charity could not always do that, and they were making a special appeal this year for funds because of this deficit. An interesting fact in connexion with the affairs of the charity was that the total expense of management was only 12 per cent., and that would compare very favourably with the expenses connected with the management of any charity in London. In the balance-sheet was included the Walter Watson legacy of 50*l.*, and the money had been invested in Consols at 2½ per cent. The amount of work entailed in the management and carrying on of the Institution was considerable; every case had to be investigated, the money promised had to be collected, and, in addition to other duties, there was the work of finding a President year after year. The whole of this work fell upon the Committee and the secretary, and in that connexion he wished to mention three names—names of men who had devoted time, etc., to keeping the Institution going, *i.e.*, Messrs Bolding & Bussell, and Mr. Thomas Stirling, who apparently devoted his life to doing good to others who were in trouble. There were others who gave ungrudging help, including the stewards. The Institution was also indebted to those architects and surveyors who readily came forward and helped, not only in the way of money, but by attending that dinner. Then there were the merchants who nobly assisted by subscribing to the funds of the Institution. But charity began at home, and he hoped that the master builders would continue to help the Institution, for the funds must come in the main from builders, and the interest and welfare of the charity should principally be looked after by the master builders. That evening he was making a special appeal for help, and especially to the builders, and, in conclusion, he would ask them to remember the words of General Gordon, *i.e.*—"Any good thing that you can do, or any kindness that you can show to a human being, do it now; do not wait or defer it, and remember that you will pass through this world but once."

The toast, having been well received,

Mr. Howard Colls proposed "The President," and, in doing so, he said that the Committee had a keen desire that Mr. Hannen should be their President this year, and it was a great pleasure to them when he consented to do so. In 1866 Mr. Benjamin Hannen, sen., occupied that chair, and they were all delighted that his son now occupied that position. As treasurer, he (the speaker) would quote one part of the report, *i.e.*, that the acute depression in all branches of the building trade had affected the Institution, and the Committee had appointed a canvasser in order to get the support of a large number of metropolitan builders who had not hitherto assisted the charity. There was considerable difficulty in getting help for a charity like this, and the Institution owed a great debt of gratitude to past-presidents and to the present President for their assistance; but the backbone of the Institution should be the annual subscriptions. Mr. Hannen had succeeded in getting a large amount of money for the Institution, and their best thanks were due to him.

The Chairman, who was received with musical honours, replied and said that he noticed that whenever the Government wanted money they enlarged the area of taxation, and his idea in collecting money on behalf of the Institution had been to enlarge the area of help. The proper people to tax to support the Institution were the people they built for.

Mr. Benjamin I. Greenwood then proposed the toast of "The Architects and Surveyors," and, in doing so, he said that they wished architects and surveyors good health—work always proceeded more smoothly when men were in good health—long life (for they preferred to do business with this generation rather than the next: the old school had learnt so much), and prosperity, for when architects and surveyors had plenty to do builders had plenty to do. The building trade was indissolubly connected with the professions of the architect and the surveyor, and there always should be good relations between them all. He was glad to say that the Institute of Builders was in cordial relations with the Royal Institute of British Architects; perhaps more so now than ever, as for almost a generation there had been a bone of contention between the two as to the conditions of contracts, but now that that difference no longer existed, the relationship was much more cordial, and he hoped it would become more so still. Sir Aston Webb suggested the other day that it would be desirable if there were more opportunities for architects and builders uniting to consider matters of construction, and so forth. That view was entirely reciprocated, he believed, by the Builders' Institute, and he thought it would be for the benefit of architects and builders if there were more frequent opportunities for discussing these matters. A conference was to be summoned between the architects and builders to discuss construction in regard to reinforced concrete, and perhaps that would form a precedent which would be of mutual advantage not only to them but to the clients also.

Mr. E. A. Gruning, whose name was coupled with the toast, in reply said that as to the conditions of contract, with the arrangement of which and the amicable settlement that was come to, he had had a large share; he cordially congratulated them on having arrived at this happy settlement.

Mr. Walter Lawrance responded for the surveyors, and spoke of the excellent work the Builders' Benevolent Institution was doing, and the necessity for such work.

Mr. F. Higgs then suitably proposed the toast of "The Vice-Presidents, Committee, and Stewards," coupled with the name of Mr. T. F. Rider.

Mr. Rider, in the course of his reply, asked why the scope of this valuable charity could not be enlarged? There was not only the London Master Builders' Association, but the National Association of Builders, and why could they not have a Builders' Benevolent Institution of Great Britain? He hoped the Committee would consider the possibility of extending the benefits of the charity.

During the evening subscriptions and donations to the amount of 1,292*l.* were announced, the Chairman's list amounting to 1,000*l.*, which included 108*l.* from himself; 50*l.* from the Institute of Builders; Lee & Eastwood, Ltd., 26*l.* 5s.; Trollope & Colls, Ltd., 20*l.*; and the Proprietors of the *Builder*, 11*l.* 11s.

ELEMENTARY SCHOOLS.

THE Education Committee of the Staffordshire County Council have recently obtained the Board of Education's sanction for the erection of a group of elementary schools, which are planned on somewhat novel lines. The innovation appears to have been made to meet the views of Dr. Reid, the Medical Officer of Health for the County, who thinks that in the designing of schools more attention has hitherto been given to "educational administrative requirements than to health conditions, especially as regards ventilation"; the central-hall type of school cannot, in his opinion, be adequately ventilated by natural methods, and, as mechanical ventilation was not approved by the Education Committee, Dr. Reid and the Committee's architect, Mr. J. Hutchings, were instructed to prepare plans on different lines. We have received a print of the approved design, which has received the name of "The Staffordshire Type of Elementary School." The plan is really a reversion to the old type of school building, but with some modifications. The two departments for girls and boys are exactly alike, each accommodating 312 children in six classrooms (four for forty-eight children and two for sixty). On the principal front there is a classroom for sixty at each end, and two for forty-eight (separated by a folding partition) in the centre, and between the large and small classrooms are two cloakrooms. In the rear of the cloakrooms are two projecting wings, each containing a lobby and a classroom for forty-eight. Two entrances are provided, one to each lobby, and are connected by a low, open verandah along the back of the two central classrooms. Each department consists, therefore, of two groups of three classrooms, each group having a central lobby and cloakroom; communication between the two groups is effected by means of the open corridor and by a door in the folding partition between the two central classrooms. Each classroom has windows of equal size on *both* sides of the scholars, and the windows have hopper-lights at the bottom and sashes above, thus reversing the arrangement adopted in hospitals.

Schools of this type will be costly on account of the large amount of external wall, and the cloakrooms are too near the doors

of the classrooms, but in other respects the plan has much to recommend it. The infants' department for 396 is planned on similar principles, and has one group of three classrooms and cloakroom, arranged as in the other departments, and two groups of two classrooms and cloakrooms; a "drill and play hall" is added to one wing for the use of all the departments.

THE SURVEYORS' INSTITUTION.

On Monday evening, at the Institution premises in Great George-street, S.W., a discussion took place on the paper on "The Licensing Act, 1904," read before the Institution in May last by Mr. John D. Wallis (Fellow). Mr. C. Bidwell occupied the chair.

The discussion was opened by Mr. Freeman, K.C., and was continued by Mr. C. S. Lakewell, Mr. J. Marks, Mr. Read Johnson, Mr. Bidwell, and others, but its subject matter is somewhat outside our scope, as it concerned the question of the basis on which a valuation for compensation for dispossession of a licence should be worked out.

THE LONDON COUNTY COUNCIL.

The usual weekly meeting of the London County Council was held on Tuesday in the County Hall, Spring-gardens, S.W., Sir E. A. Cornwall, Chairman, presiding.

Loans.—On the recommendation of the Finance Committee, it was agreed to lend Battersea Borough Council 10,891*l.* for electric light installation; Bethnal Green Borough Council 10,000*l.* for paving works; and Southwark Borough Council 5,942*l.* for electric lighting purposes.

Port of London.—The Rivers Committee recommended:—"That this Council regrets that, owing to the action of the Government, no great reform of the Port of London has been carried on during the present Parliament, and again emphasises its opinion that, in the general interest of London, it is of urgent importance that an immediate reform of the control of the Port of London should take place."

After discussion, and the defeat of an amendment, the recommendation was agreed to.

Formation of Streets on the Forster and St. German's Estates, Catford.—The Building Act Committee brought up the following report:—

"Our attention has recently been drawn by the Lewisham Metropolitan Borough Council, in consequence of the receipt by the borough council of a numerously signed petition from residents on the St. German's estate, Catford, to the want of outlets into the Bromley-road for the roads on that estate, and also to the lack of communication between the St. German's estate and the Forster estate adjoining.

In 1901 applications were made for consent to the formation of roads on the western portion of the St. German's estate, where it adjoined the Forster estate, and on the Forster estate. It was considered that the schemes were objectionable, inasmuch as no proposals were made to connect the estates, and accordingly the Council, on July 16, 1901, refused the applications. In both cases the applicants appealed to the Tribunal of Appeal, and the appeals were upheld. On January 20, 1903, the Council refused a further application for the formation of roads on the St. German's estate, and this appeal was also successful. In the last case, however, the Tribunal imposed a condition that the land necessary for the continuation of Dowanhill-road up to the boundary line between the St. German's and Forster estates should not be permanently built upon before September 29, 1908. Up to the present time nothing appears to have been done to make use of the land so reserved for the purpose of linking up the roads on the two estates, and it will be observed that the condition imposed by the Tribunal does not make it obligatory for Dowanhill-road to be continued, but only for the land necessary for its continuation to be reserved for a specified period.

It will be seen that the decisions of the Tribunal of Appeal have, as in other cases, completely nullified the action of the Council, and the results illustrate in a marked degree the difficulties under which the Council labours in its administration of the London Building Acts. An attempt was made to remove the difficulty with regard to roads by the inclusion in the recent bill for the amendment of the Building Acts of provisions which would enable the Council to insist upon adequate communication between adjoining estates, but these were, unfortunately, included in that portion of the bill which was withdrawn in accordance with the arrangement which preceded the passing of the London Building Acts (Amendment) Act, 1905. . . .

We drew the attention of the Improvements Committee to the matter, so that they might consider whether the means of communication suggested by the borough council should be formed as ordinary local street improvements, and we understand that they will report that they do not see their way to recommend the Council to contribute towards the cost of forming the suggested means of communication. . . ."

Capt. Hemphill, Chairman of the Building Act Committee, called attention to the matter, and said that in the Administrative County of London there were 15,000 acres of land available for building still unbuilt over, excluding parks and open spaces; in other words, nearly a quarter of the land available for building in London was still unbuilt upon. The report showed how some of this land was being developed, and how slums are created. He thought that some remedy from this state of affairs was desirable, and that attention should be drawn to the action in this matter and others of the Tribunal of Appeal, who had defeated the Council in its endeavours to get these estates developed in the proper way.

Sir T. Brooke Hitchin said that the Tribunal of Appeal was composed of men who thoroughly understood their own business.

Mr. Cleland said he did not believe in the Council interfering with a properly-constituted Tribunal, but, in this case, he thought they were justified in calling attention to the matter.

The report was adopted after further discussion.

Ravensbourne-street Bridge.—The Bridges Committee recommended, and it was agreed, that expenditure on capital account, not exceeding 5,483*l.*, be sanctioned for the reconstruction, in accordance with the plan approved on May 3, 1904, of the bridge carrying the South-Eastern and Chatham Railway over Ravensbourne-street, Lewisham.

Lectures on Heraldic Design.—On the recommendation of the Education Committee it was agreed that two courses of four lectures on heraldic design be given at the London County Council Camberwell School of Arts and Crafts, and the London County Council Central School of Arts and Crafts respectively; Mr. G. W. Eve will be the lecturer.

Improvement.—The Improvements Committee recommended, and it was agreed, that the Improvements Committee be authorised to arrange for the widening of Euston-road to 60 ft. at and near the site of the station of the Charing Cross, Euston, and Hampstead Railway.

By-laws as to Locomotives.—The Public Control Committee recommended:—

"(*a*) That by-laws . . . be made under the provisions of sect. 6 (1) of the Locomotives Act, 1898, with regard to the use of locomotives within the administrative county of London (exclusive of the City of London); that the seal of the Council be affixed to three copies of the by-laws; that application be made in due course to the Local Government Board for the confirmation of the by-laws, as required by the Act; and that the Public Control Committee be authorised to issue the necessary notices of the Council's intention to apply for the confirmation of the by-laws, and to take all other measures which may be requisite with regard to the matter.

(*b*) That the President of the Local Government Board be asked to receive a deputation from the Council on the subject of the promotion of fresh legislation to amend the Locomotives Acts on the following lines, and that the Public Control Committee be authorised to take the necessary steps in the matter:—

(i.) That all locomotives and trailers shall be fitted with suitable springs.

(ii.) That licensing authorities shall be empowered to refuse to licence any locomotive which is not so constructed as to avoid unnecessary noise or vibration, subject to an appeal to a magistrate in case of dispute.

(iii.) That the weight of engines shall not exceed 8 tons on any axle (such weight to apply to towns only).

(iv.) That the weight of a trailer and load shall not exceed 12 tons.

(v.) That licensing authorities shall be empowered to weigh vehicles.

(vi.) That the present limit of width of locomotives and trailers, viz., 9 ft., shall be reduced.

(vii.) That no locomotive shall be allowed to draw more than two trailers in towns."

Sir Wm. Collins moved, and Mr. Torrance seconded, that the following words be added to the recommendations—*i.e.*, "and that the Public Control Committee be instructed to prepare and submit to the Council further by-laws prohibiting the use of heavy locomotives in certain streets, and restricting their use in other streets during the day and night respectively."

After discussion the amendment was rejected, and the Committee's recommendations were agreed to.

List of Rates of Wages and Hours of Labour.—The Works Committee reported as follows, the recommendations being agreed to:—

"The rates of pay for labourers inserted in the Council's list of rates of wages and hours of labour is 7d. an hour for labourers in the building trade, and 6d. an hour for labourers in the engineering trade. Under the subhead of 'various trades' in the list there is a trade of painters' labourers with a rate of pay of 6½d. an hour. There is no agreement between employers and trade unions with regard to the wages of painters' labourers, and we therefore propose that this trade should be omitted. Contractors employing painters' labourers other than those engaged in the building and engineering trades would then be required by the conditions of contract to pay such labourers a rate of wages not less and observe hours of labour not more than those in practice obtained in London. We recommend that the trade of painters' labourers be omitted from the Council's list of rates of wages and hours of labour."

Fire at No. 49, Queen Victoria-street.—The Fire Brigade Committee brought up the following report:—

"On November 10, 1905, an inquest was held, under the City of London Fire Inquests Act, 1888, by the city coroner, into the cause of a fire which occurred at No. 49, Queen Victoria-street, E.C., on November 5, 1905, when the jury returned a verdict to the effect that the fire broke out in the basement of the building, and was probably caused by a defective electric circuit. The jury expressed the opinion that the means of escape in case of fire were totally inadequate, and they recommended that the following improvements should be made, viz., (1) that all electrical wires throughout the building should be encased in metal tubing; (2) that the lift should be encased in fire-resisting material; (3) that a strong iron railing should be placed outside the building along the parapet; (4) that iron escape ladders should be fixed; and (5) that an additional staircase should be provided to serve the other end of the building. . . ."

The Council adjourned soon after seven o'clock.

APPLICATIONS UNDER THE 1894 BUILDING ACT.

The London County Council at their meeting on Tuesday dealt with the following applications under the London Building Act, 1894. The names of applicants are given between parentheses:—

Lines of Frontage and Projections.

Hampstead.—Buildings on a site abutting upon the southern side of West End-lane and eastern side of Crediton-road, Hampstead (Mr. R. L. Pearce for the Middlesex Building Company).—Consent.

Wandsworth.—Three-story buildings with shops on the eastern side of Garratt-lane, Wandsworth, northward of St. Andrew's church (Mr. L. S. Rogers for Messrs. J. & R. Heard).—Consent.

Hampstead.—An iron and glass hood over the entrance to No. 148, Goldhurst-terrace, South Hampstead (Messrs. James & Laycock for Mrs. Beedell).—Consent.

Dulwich.—Three houses with shops on a site abutting under the west side of Grove-lane, and north side of Champion-grove, Camberwell (Mr. R. L. Freeman for Mr. T. Freeman).—Consent.

Hackney, North.—Buildings on the west side of Wordsworth-road, Stoke Newington, southward of the Baptist chapel (Mr. C. M. Cobb for Mr. A. J. Weibking).—Consent.

Hackney, South.—Buildings on a site abutting upon the east side of Urswick-road, south side of Lesbia-road, and north side of College-avenue, Hackney (Mr. J. G. Tewson for Mr. D. Burnett).—Consent.

St. George, Hanover-square.—A sign on the ridge, and electric lamps round three sides, of the iron and glass shelter at Hatchett's Restaurant, Piccadilly (Mr. W. M. Rolton).—Consent.

Wandsworth.—An addition at the rear of No. 292, Merton-road, Wandsworth, to abut upon Standon-road (Mr. W. G. James for Mr. H. J. Bailey).—Consent.

Paddington.—An iron and glass porch at No. 1, Hyde-park-terrace, Bayswater-road, Paddington. (Mr. R. L. Cole for Mr. S. N. Braithwaite).—Consent.

Line of Frontage and Formation of Streets.

Clapham.†—Buildings on the site of Nos. 66, 67, and 68, Clapham-common, South-side, Clapham (Messrs. Homer & Lucas).—Refused.

Width of Way and Line of Frontage.

Lewisham.—A mission-hall upon the site of Nos. 211, and 213, Sydenham-road, Lewisham, with a boundary fence at less than the prescribed distance from the centre of the roadway of Laurel-grove (Messrs. E. Harper & Brother).—Consent.

Southwark, West.—A crane opposite Nos. 42 and 44, Bankside, Southwark (Mr. A. Harrison for the Council of the Metropolitan Borough of Southwark).—Consent.

Formation of Streets.

Kensington, North.—The formation or laying-out of new streets on the St. Quintin estate, Quintin-avenue, Kensington; deviation from plans approved (Messrs. Trant, Brown, & Humphreys).—Consent.

Islington, North.—That an order be issued to Mr. C. W. Callcott, sanctioning the formation or laying-out of new streets for foot traffic only, and in connexion therewith the erection of buildings and an iron and glass shelter upon a site on

the southern side of Highgate-hill and western side of Junction-road, Islington (Mr. J. W. Galton).—Consent.

Space at Rear.

Brixton.—A modification of the provisions of section 41 with regard to open spaces about buildings, so far as relates to the proposed erection of a house on the north-western side of Atherfold-street, Clapham (Mr. V. Vagnolini for Mr. W. P. Goosey).—Consent.

Brixton.—A modification of the provisions of section 41 with regard to open spaces about buildings, so far as relates to the proposed erection of three blocks of artisans' dwellings on a site on the east side of Stockwell-road and south side of Moat-place, Brixton, with irregular open spaces at the rear (Mr. P. Tree for Foster's Trustees).—Consent.

Bermondsey.—A modification of the provisions of section 41 with regard to open spaces about buildings, so far as relates to the proposed erection of a building on Lot 2, Tower Bridge-road, Bermondsey (Messrs. Barlow, Roberts, & Thompson).—Consent.

Deptford.—A modification of the provisions of section 41 with regard to open spaces about buildings, so far as relates to the proposed erection of eleven houses on the northern side of Lamerton-street, Deptford (Mr. G. A. Lansdown for Mr. J. E. Lamerton).—Refused.

Means of Escape from Top of High Buildings.

Strand.—Means of escape in case of fire, proposed to be provided in pursuance of section 63 of the Act, on the topmost story of Nos. 226 and 227, Piccadilly (Mr. H. A. Woodington).—Consent.

The recommendation marked † is contrary to the views of the local authority.

THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

THE third meeting of the session was held at 18, Tufton-street, Westminster, S.W., Mr. F. Lishman being in the chair, when Mr. H. Passmore read a paper on "Village Schools," of which the following is an abstract:—

In introducing the question of modern planning requirements, Mr. Passmore dealt with the gradual rise and extension of education, advocating a fuller study of country occupations for the children in village schools. The regulations for public elementary schools issued by the Board of Education were commended for their practical instructions on planning and construction. The first points to be considered were:—(1) Total number of scholars to be provided for; (2) the respective numbers of boys, girls, and infants—the latter class needing a margin to meet the varying attendance at different seasons. The next care is to arrange the needful accommodation as simply as possible, and most suitably for the site. Small schools may well be planned as a single room, but must not, in that case, exceed 600 ft. in area. There should be separate entrances and cloakrooms for all three departments in larger schools, though, if required by special circumstances, the infants and girls may enter by the same door. These cloakrooms should not be passages, and need separate entrance and exit doors. Good ventilation and lighting are essential here, and the dimensions given in the regulations must be observed. Basins, in larger proportion for girls than boys, need to be provided, fitted with self-closing taps. A drinking tap in each department and a sink and cupboard for caretaker's use are also wanted. In planning classrooms the light should fall from the left hand, and the aspect chosen should always be a sunny one. Cross-ventilation must be provided by windows preferably high up in wall opposite to that containing the windows for lighting purposes. This can often be secured over cloakrooms by keeping the latter lower than the main buildings. Classrooms should have a floor area equal to at least 10 sq. ft. per child, and accommodate not less than twenty-four, or more than fifty or sixty. The infants' room needs a clear space for physical drill, not less than 12 ft. wide. Open fires are the best and most practical means of warming. Latrines must be placed well away from the school buildings, providing for all three departments separately. In small schools closets common to girls and infants may be allowed. Trough closets with automatic flushing tanks are satisfactory. Earth closets should be used where no main sewer is available. In a school of 100 children allow at least five closets for girls, three for boys, and four for infants. A glazed channel, automatically flushed, forms a good urinal. The playground should have a lean-to against one boundary wall for exercise in wet weather. Desks are arranged on stepped platforms, either continuously or in "pairs." Space has to be allowed for the teacher to pass between the rows and behind the back row. The desks are slightly inclined and the seats provided with backs, and capable of being turned up. The teacher's desk stands on a platform, and is provided with cupboard and drawers; and a shelf on each side is useful. A cupboard for books is also needed. Folding partitions are useful to divide the classrooms; those separating the infants' room should be made as soundproof as possible. A blackboard on the middle of the wall facing the scholars is needed. The materials used in construction should be local where possible, and used in the way traditional to the district. Plaster walls, finished with distemper, give a pleasant finish internally, glazed brick forming a good dado; so also does linoleum finished with wood capping and fillet at foot. A picture-rail is useful. Sash windows are probably preferable to casements, but lights high up may be hung as hoppers, or on centres. Doors should open outwards. Internal woodwork is best if stained and varnished as a finish. It is better not to leave roofs open to the apex. Ventilation may be by trunks above the ceiling, but special care has to be taken to prevent down-draught, and a ventilating flue beside the smoke flue is probably better. Floors should be solid; those in the classrooms of wood-block in mastic on cement-concrete, and those to cloakrooms, etc., of tiles or granolithic. Mr. Passmore concluded by urging the teaching of local history and literature in the village school, believing that therein lay the future of true country life.

Mr. P. Turner, in opening the discussion, referred to the difficulties often found in providing a good water supply, and thought that the collection and filtration of rain water would often meet all needs. The waste from urinals could be disposed of by running it into a length of 6-in. pipe filled with sawdust. Artificial lighting had not been referred to; acetylene could now be used in many cases.

Other speakers referred to the fuller use of windows as ventilators, in preference to more elaborate arrangements. Mr. Peters advocated the adoption of open-air classes. Mr. Mellor pointed out that expensive building often paid in saving of up-keep. Girls' cloakrooms need more than the official allowance per peg, and all cloakrooms wanted the utmost ventilation possible. Another point raised during the discussion was the trouble caused by staging for desks when a room was needed for parish use.

Professor Simpson, in summing up, advised that all buildings should be combined under one roof. Waxing was an excellent finish to a linoleum dado, as also to plastered walls. Grooved boards, laid on bitumen, on concrete bed, were preferable to wood blocks. Wide doors might be made in two unequal parts, one being kept bolted, except when extra door opening was needed for emergencies.

ARCHITECTURAL SOCIETIES.

EDINBURGH ARCHITECTURAL ASSOCIATION.—At a meeting of the Edinburgh Architectural Association on the 22nd ult., Mr. H. O. Tarbolton, President, in the chair, Mr. James A. Morris, architect, Ayr, read a paper, entitled "An Old Scottish Town." After outlining the history of Ayr, he gave particulars regarding some of the prominent architectural features of the old town, including the Old Bridge, Adam's Bridge, the Tolbooth, the Old Church, the Wallace Tower, the Church of St. John, and the Citadel. In the course of his remarks regarding the Old Bridge, Mr. Morris referred to the question of its preservation. He joined issue with the opinion of Sir William Arrol and Mr. Hall Blyth, who advocated the destruction of the Old Bridge and its rebuilding as far as possible with the old material. Mr. Hall Blyth seemed to think that the identity of the bridge would thereby be preserved, forgetting that if once destroyed the Old Bridge and the bridge of Robert Burns was gone absolutely and irretrievably. Mr. Morris indicated that he approved of the schemes submitted by engineers advocating the preservation of the existing structure, and stating its practicability. The lecture was illustrated by lantern slides.

MANCHESTER SOCIETY OF ARCHITECTS.—The fourth general meeting of the students of the Manchester Society of Architects was held last Tuesday evening, presided over by Mr. P. S. Worthington. Mr. R. W. Orme read a paper on "Italian Renaissance," illustrated by a large number of photographs. The lecturer began by showing that this "rebirth" of classical forms was due, firstly, to the close study of classical literature; secondly, to the unsuitability of the classical style to the Italian climate. The lecturer then passed on to show how the style first developed itself in Florence, and then traced its course to the great cities of Venice, Milan, and Rome, and finished with a few brief remarks on the decline. In the debate that followed Mr. Worthington said that he thought the lecturer had not made enough of the importance attached to planning in the later period, many of the plans being excellently thought out. A question was raised as to the suitability of Renaissance as opposed to Gothic for church interiors, and this point brought about a very lively discussion, the result of which was that, whilst both might be used with advantage, yet the Gothic style perhaps produced the more impressive effect in this country.

SHEFFIELD SOCIETY OF ARCHITECTS AND SURVEYORS.—At a meeting of the Sheffield Society of Architects and Surveyors, held in the Society's rooms, Leopold-street, on Thursday last week, Mr. E. Holmes, the President, occupied the chair, and the second of a series of lectures on "English Renaissance Architecture" was delivered by Mr. J. R. Wigfull. He dealt with the period from 1600 to 1650, and, quoting Lord Bacon's introduction to his essay on building that "Houses are built to live in, and not to look on," went on to explain the arrangement of the houses of the period, and showed by a series of plans the changes which were gradually introduced, until in the time of Inigo Jones the Italian villa supplanted to a great extent the English house, which in many respects was more suitable to our northern climate. A few typical buildings of the early part of the period, such as Hatfield House and Bolsover Castle, were described. The lecturer then dealt with Inigo Jones, the first, and perhaps the greatest, architect produced by England during the Renaissance period. After a reference to the early life of this architect, the lecturer showed a series of views of buildings by Palladio of Vicenza, an architect whose work exercised a great influence upon that of Jones. The purity of detail in the work of the Italian master was contrasted with the eccentricity of much of that done at the present time. Mr. Wigfull urged the study of the principles laid down by Palladio, not for the purpose of slavishly copying him, but to see on what lines he worked to produce the effects he obtained in his buildings. Returning to the work of Inigo Jones, his design for the great palace at Whitehall was described, a design which, with the exception of the Banqueting House, erected in the years 1619-22, was fated to remain unrealised in actual fact, the Civil War putting an end to this and many other architectural projects of the time. The work of Inigo Jones at St. Paul's Cathedral, Wilton House, and many other places was described, and illustrations of earlier work were used to show what changes he had effected in the internal treatment of buildings. The lecture was illustrated by lantern slides, most of which had been prepared by the lecturer, and at its conclusion a vote of thanks was accorded on the proposition of Mr. E. Holmes, seconded by Mr. W. J. Hale, and supported by Messrs. H. L. Paterson and J. M. Jenkinson.

VICTORIA STATUE, LEEDS.—At Leeds on the 27th ult., the Lord Mayor unveiled in Victoria-square, opposite the town hall, a memorial statue of her late Majesty Queen Victoria. The statue, for which about 8,000*l.* was subscribed by the citizens, is in bronze, and is the work of Mr. G. J. Frampton, R.A. Queen Victoria is represented at the age of about fifty years, holding in the right hand the sceptre and in the left the orb. There are side figures in recesses representing peace and industry, and at the foot of the monument on a broad band of bronze the names and emblems of India, Canada, Africa, and Australia are set forth. The base is of Portland stone.

Fifty Years Ago.

FROM THE *Builder* OF DECEMBER 1, 1855.

A DIPLOMA SOCIETY.

WHILST reading your recent leading article as to "The Architectural Association," the idea occurred to me of instituting "a general society" of the kind throughout the country, the members agreeing to submit themselves to an examination at the Royal Institute of British Architects. This, with the aid of "the Institute," and backed, of course, by the *Builder*, would at once put down all opposition to architectural diplomas. I am a young man myself, and feel how great a benefit such a protection would be to those who had honestly earned it; against, as it were, architectural quacks, who not only deprive the competent practitioner of business, but injure the profession generally, by the wretched buildings which are erected under their directions. Of course, it would require some hard study to pass such an examination, but that would fill the mind with many good and noble ideas, and which would at some future period be the means also of filling the pockets.—*Letter signed "A Student."*

Illustrations.

ILLUSTRATIONS OF THE SCALA THEATRE.

WE have much pleasure in giving two illustrations, from photographs, of the interior of the Scala Theatre, which affords an example of a reform in the architectural treatment and decoration of theatre interiors that we have long advocated but never expected to see. As a general rule, a theatre interior seems to be considered only an opportunity for a kind of pie-crust decoration in a riot of plaster and gilding; and it is a positive refreshment to see a play in a house which is designed on dignified and severe architectural lines. Possibly, with one or two more theatres carried out in this manner, audiences may get educated up to it. At present (and no wonder, after all the bad habits they have got into) they evidently are not, and it was amusing to overhear the complaints of the occupants of the stalls, when we visited the theatre, as to its coldness of appearance, and so on. People are so used to gewgaw in theatres that an architectural treatment seems at present beyond their comprehension. Yet in fact this quietness of treatment in the architecture of the house is really a scenic advantage, as it gives more emphasis to the scenery and the figures on the stage, which should be the principal point of the *coup d'œil*. It is almost needless to add that the drop-curtain is a simple unadorned crimson curtain, not bedizened either with a landscape or with sham loops and festoons.

The staircases on each side, which give or suggest the name to the house, were we believe an idea of the management, accepted and turned to account by the architect. They are of no particular practical use, unless an occupant of the stalls wishes to look for a friend in the balcony between the acts, but they certainly make a very pleasing architectural feature, and give an individuality to the interior.

It is quite a relief to find real marble in a theatre, instead of "compo." We must admit (and we regret it) that the jointing of the arch over the proscenium is a sham jointing; the material is an artificial stone which appears in this case to have been put up *en bloc*. It might, we should think, have been made in voussoir blocks, and built as a genuine arch, which would have been more satisfactory to one's architectural conscience. But this is the only criticism we have to make.

The architect of the theatre is Mr. Frank T. Verity, who sends us the following notes on the work:—

"The theatre is situated midway between Oxford-street and Fitzroy-square, and built on the site of the old Prince of Wales's Royal Theatre, and adjoining property on what is practically an island site. The old house came into existence 145 years ago, when, in 1760, Signor Pasquali erected the playhouse which attained the height of its popularity in the days of the Bancrofts.

The plan of the auditorium is strictly academical, from which the architectural treatment of the interior has grown, its main features being the marble staircases on each side of the house connecting the stalls and dress-circle, and passing under the two boxes. The house is a two-tier one, the gallery being practically a continuation of the upper-circle tier. The dress-circle and stalls are approached from Charlotte-street through a spacious vestibule, on either side of which ticket offices and cloakrooms are placed; the seating accommodation of the house is for 1,400 persons.

The plan determined the elevation treatment of the walls, the chief *motif* consisting of a superimposition of the Doric and Ionic orders, after the manner of Palladio; this has been divided into bays in which the exit doors and boxes are composed as features in scale with the orders; great care has been taken to carry the main architectural lines completely round the auditorium, and to preserve all centres. The proscenium wall is designed in a similar manner; the cornice of the lower order is carried over the arched opening, and the space above filled with a sculptured architectural panel in low relief. The fronts to the circles are formed of gilt-iron railings, presenting a contrast with the stone and marble of the wall surfaces. The construction throughout has been rendered thoroughly fireproof.

The chief materials used for the decoration are as follows:—Pavonazza marble for surbase, columns, pilasters, and doorways, bronze for caps, bases, and other decorative work, and stone composition resembling Craigleith stone for the wall surfaces. The wood doors are of teak, maple bolection mouldings, and maple veneer being used for exposed surfaces.

The general contractors for the work were Messrs. Allen & Sons, of Kilburn; the steel construction being carried out by Messrs. Richard Moreland & Sons; the marble work and stone composition by Messrs. Farmer & Brindley, Westminster Bridge-road."

DENMAN HOUSE, PICCADILLY.

THIS building is situated at the corner of Piccadilly and Air-street and close to Piccadilly-circus. It is built entirely of Portland stone, is of fire-resisting construction, and is occupied as shops and offices.

The architect is Mr. Harold A. Woodington.

S. WINEFRIDE'S CHURCH, SOUTH WIMBLEDON.

THE church is of simple but substantial construction, and the design is of early Romanesque character suited to a plain brick building. The plan comprises a large and wide nave, with narrow processional aisles on either side, a sanctuary raised several steps above the nave level, flanked on one side by a side chapel and on the other by priests' and boys' sacristies, a transept on the north side, with a porch adjoining giving access to that portion of the church, and a baptistry at the north-west corner. The main entrance is by a deeply-recessed arched doorway at the west end, and there is also another entrance porch at the south-west corner.

The total length is 112 ft., and the width of nave 33 ft.

Accommodation is provided for between six and seven hundred persons, and the contract is for 6,375*l*.

Mr. Frederick A. Walters, of Westminster, is the architect, and Messrs. James Smith & Sons, of South Norwood, are the builders.

CHURCH AT EGREMONT, CUMBERLAND.

THIS drawing, which was exhibited at the last Royal Academy, shows a perspective view of a Catholic church which is to be erected on an elevated site at Egremont, in Cumberland.

The church consists of a nave and one aisle, and has seating accommodation for about 350. There is a lady chapel and organ place on the north of the sanctuary, the sacristies being on the south side connecting the church with an existing house, which will be used as a residence for the priest.

A baptistry is on the north side opposite the porch.

The walling will be of local sandstone, and the roofs covered with Buttermere green slates. The heating will be by means of warm air, and the lighting by gas.

The architect is Mr. Frederick A. Walters, F.S.A., of Westminster.

Correspondence.

S. MICHELE, LUCCA.

SIR,—In M. Lucien Bégule's new work, "Les Incrustations Décoratives," there is a fine illustration of the front of S. Michele, at Lucca, which is apparently taken from a photograph, and which shows the friezes over the four stories of arcades as having their backgrounds filled in with a dark composition. In Ruskin's "Seven Lamps," plate 6 shows the north angle of the frieze over the second gallery, with the background quite clear of any filling-in. The extreme accuracy of Ruskin's drawing may be tested by comparison with the photograph (except that in the engraving his drawing has been reversed—an accident which "the master," perhaps, regarded as of no moment), and it is not likely that he made any mistake in drawing the figures of the frieze in relief instead of outlined by a background of some foreign material.

Do any of your readers know if, and when, the front of S. Michele was restored?

J. TAVERNER-PERRY.

ENTASIS OF COLUMNS.

SIR,—Regarding the statement in last week's *Builder* as to the entasis of Greek columns: although it is to be supposed that the Greeks merely gave an entasis to their columns to prevent them looking hollow, yet in many cases they appear to have overdone it. This is especially in evidence in one of the most refined examples, namely, the so-called "Theseion" at Athens.

In Vol. III. of Stuart and Revett's "Athens," a footnote with reference to these Theseion columns states that "They are executed with a very perceptible entasis," but in Vol. IV. it is clearly stated that the entasis "is not perceptible to the eye, and scarcely to the rule."

I am bound to say that my own observations from visits to this temple at three different periods coincide with the statement that there is a very perceptible entasis, which is apparent without looking for it. BANISTER F. FLETCHER.

*** We should suggest that Mr. Fletcher's eye has been deceived into seeing what he expected to see. We suppose he does not dispute that the Parthenon represents the highest perfection of Greek architecture, and that the entasis in that building is not "overdone," and in fact is difficult to perceive with the eye. Would it surprise him to hear that the entasis in the Theseion columns is *less* than that of the Parthenon? Not only positively less owing to smaller scale, but relatively less in proportion to the scale of the column. The relative proportions of entasis in the Parthenon and the Theseion are as 9 to 7—on the authority of Penrose, which in regard to facts of measurement of this kind may be taken as absolutely trustworthy.—ED.

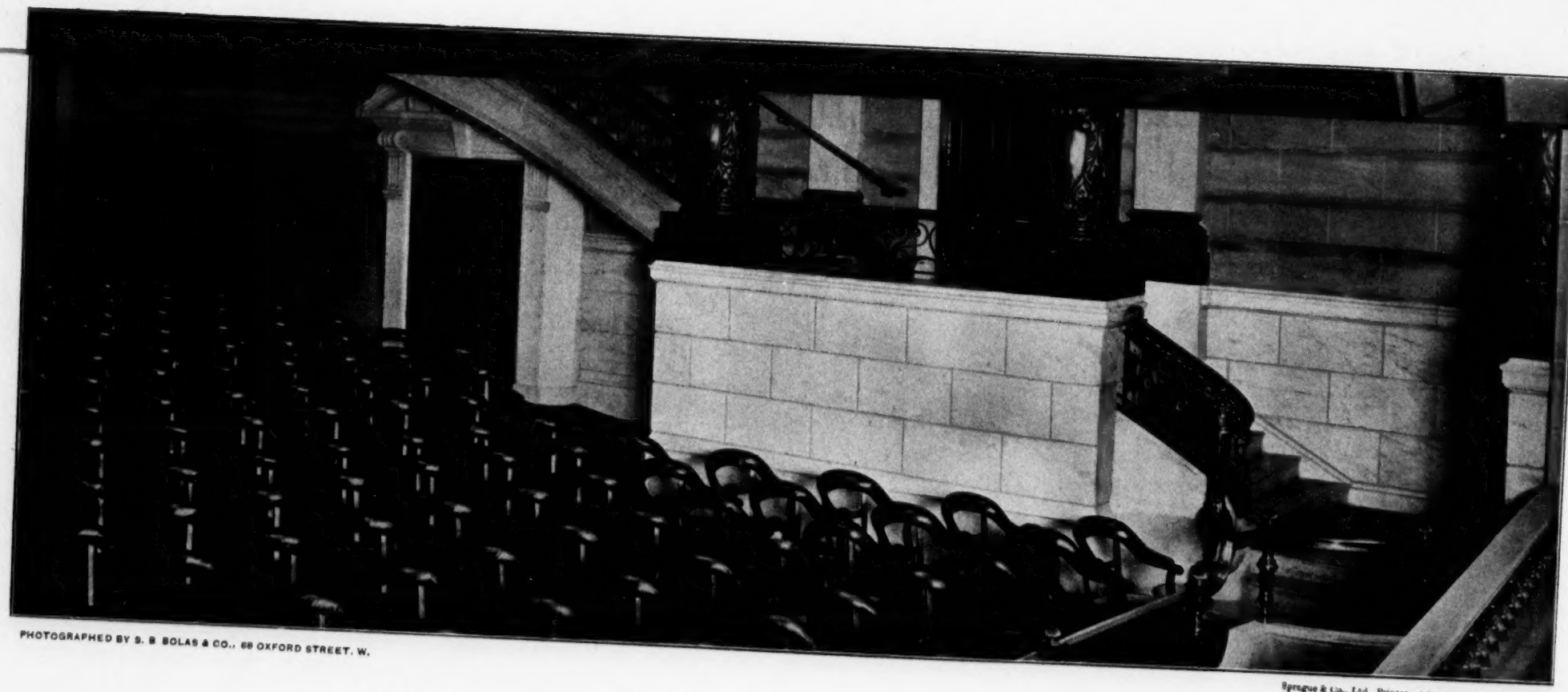
THE CHEAP COTTAGES EXHIBITION.

SIR,—I find that in my paper on this subject at the Sanitary Institute there was a clerical error as to the size of the living room in Lord Carrington's cottages. It should be 12 ft. by 11 ft.; not 12 ft. by 8 ft.

THOS. W. ALDWINCKLE.

COMPETITION

NEW CITY HALL, PERTH.—The Report by Mr. John J. Burnett, A.R.S.A., Glasgow, the assessor appointed to adjudicate on the plans for the new City Hall, has now been received. There were altogether thirty competitors. Three plans were selected for the new City Hall in order of merit for premiums of 50, 30, and 20 guineas. There were also three plans selected for the reconstruction, the premiums for which were 30, 20, and 10 guineas. The authors of the premiated plans are as follows, viz.:—*Erection of New Hall*—(1) Mr. J. Wallace Archer (Edinburgh); (2) Messrs. Thomson & Robertson (Brighton); (3) Messrs. Henry & M'Lennan (Edinburgh). *For the Reconstruction of Existing Hall*—(1) Mr. James Sibbald (Dundee); (2) Messrs. Menart & Jarvie (Perth); (3) Messrs. Hall, Jones, & Cummings (London). The plans will be exhibited in the Picture Gallery of the Sandeman Library from 23rd inst. to the 2nd proximo, and will then be returned to the authors.



PHOTOGRAPHED BY S. B. BOLAS & CO., 66 OXFORD STREET, W.

INTERIOR, SCALA THEATRE: FROM STAGE.—Mr. Frank T. Verity, F.R.I.B.A., Architect.

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INTERIOR, SCALA THEATRE: FROM STAGE.—Mr. Frank T. Verity, F.R.I.B.A., Architect.

EXIT

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INTERIOR, SCALA THEATRE: FROM BALCONY.—Mr. Frank T. Verity, F.R.I.B.A., Architect.

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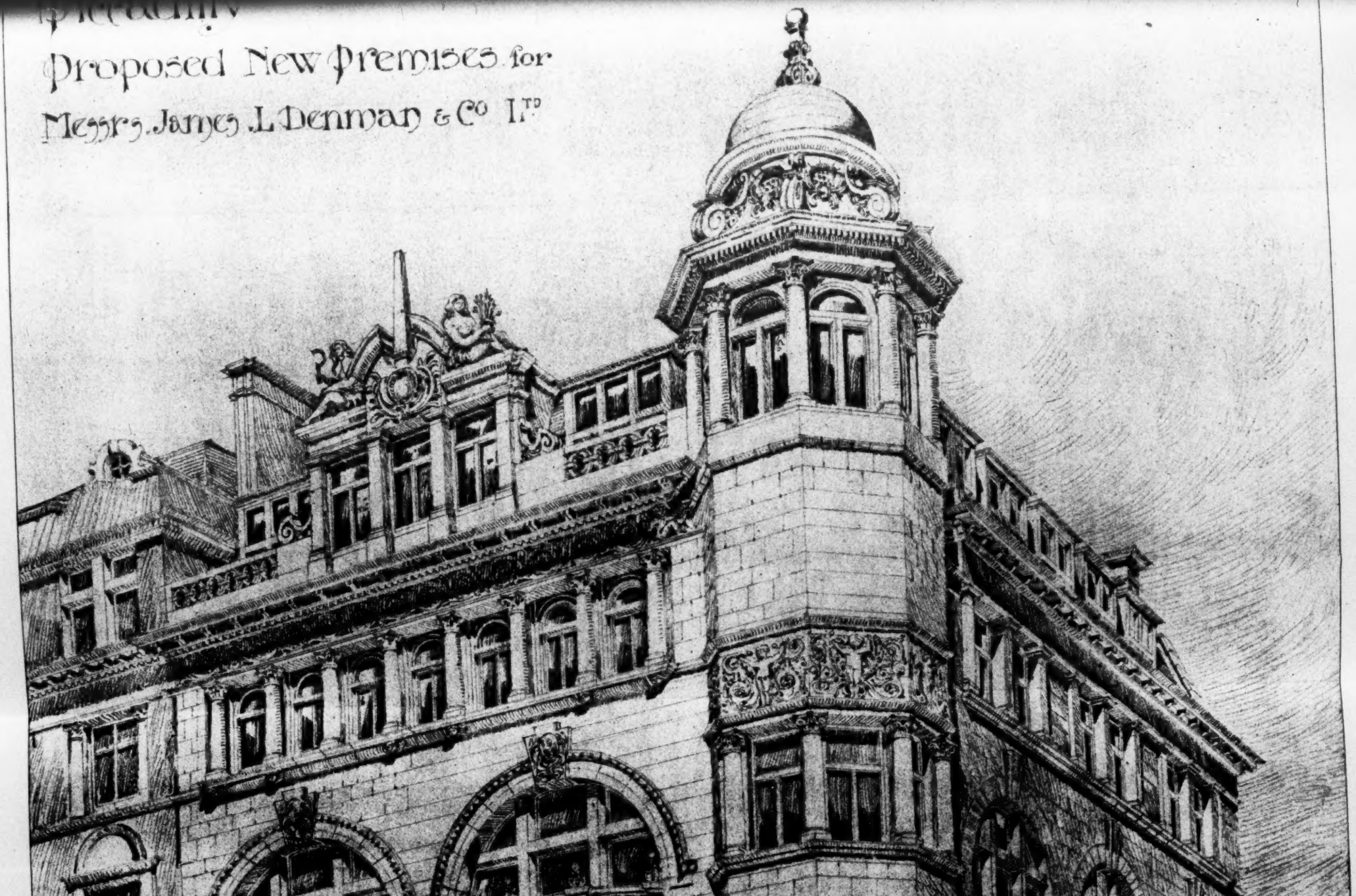
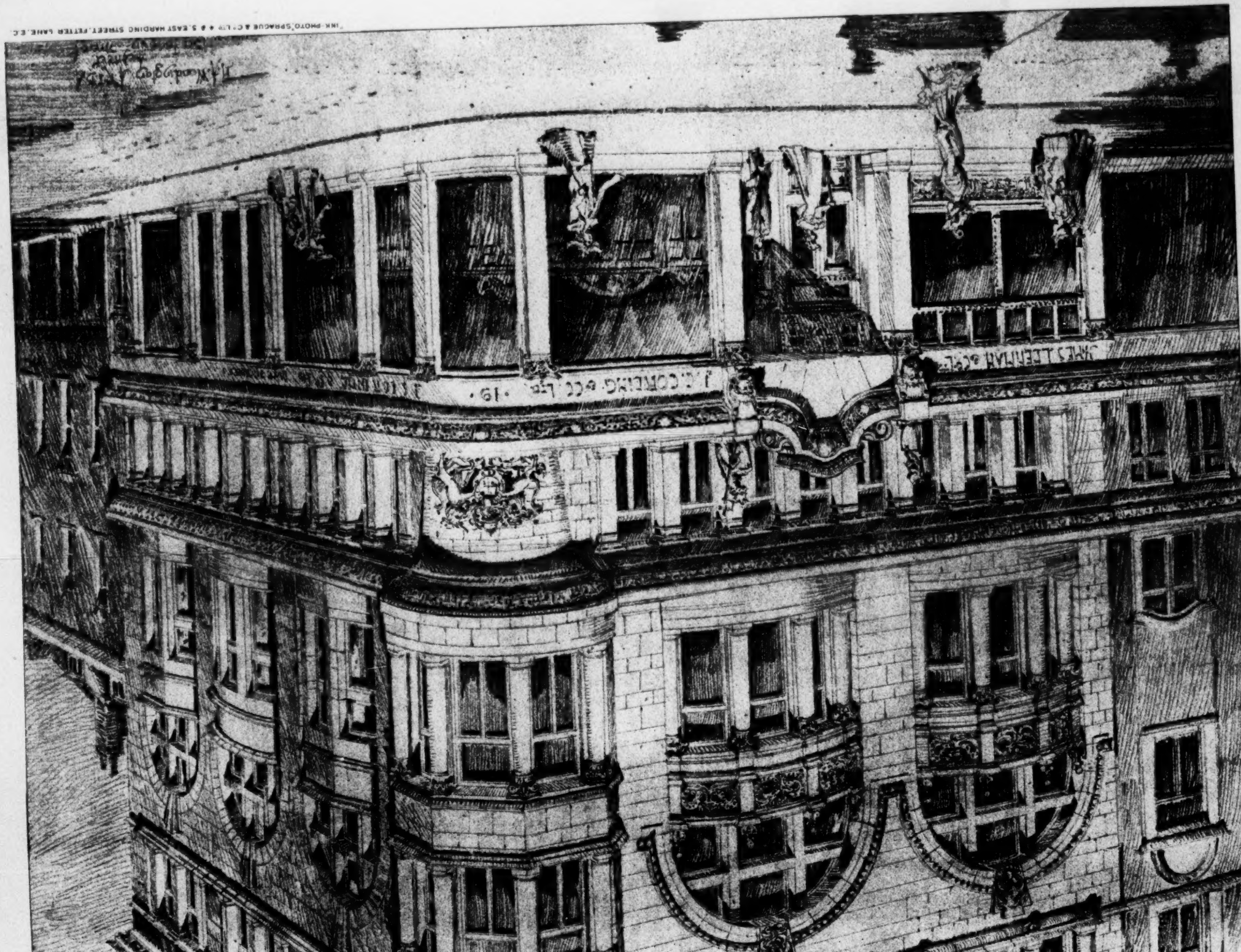




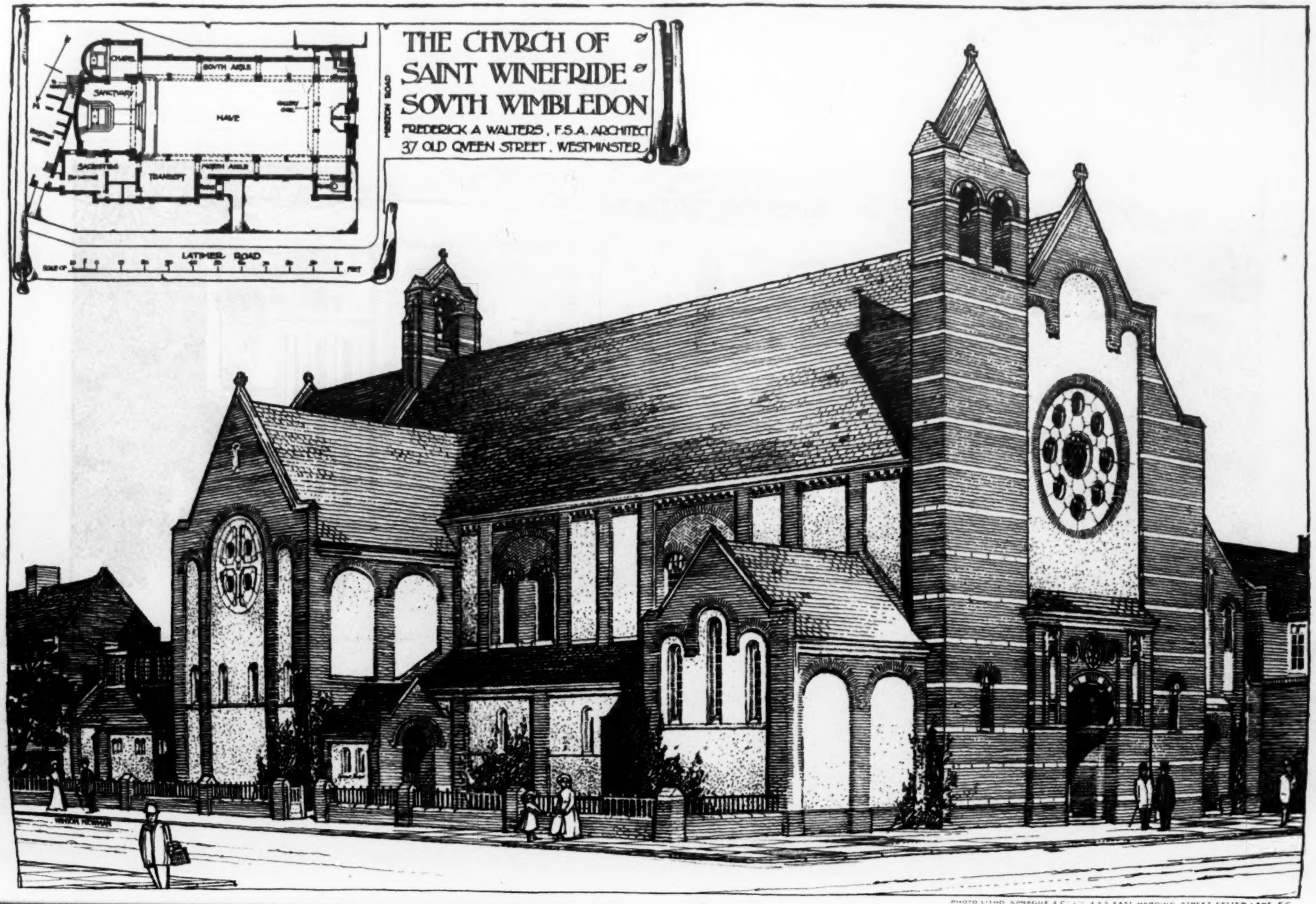
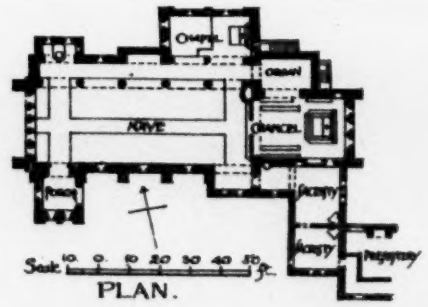


PHOTO LITHO SPRAGUE E.C. & L^TD. 455 EAST HARDING STREET FETTER LANE, E.C.

NEW CATHOLIC CHURCH AT EDGWARE, MIDDLESEX.

NEW CATHOLIC CHURCH AT EGREMONT: CUMBERLAND



PLAN.

FREDERICK W. WALTERS: F.S.A.
ARCHITECT
37 OLD QUEEN STREET
WESTMINSTER. S.W. JULY 1903

PHOTO LITHO SPRAGUE & Co LTD 4 & 5 EAST HARDING STREET FETTER LANE, E.C.

Books.

Old and New Architecture in Khiva, Bokhara, and Turkestan. By O. OLUFSEN. (Copenhagen: Gyldendalske Boghandel. 1904.)

THIS book, which, in spite of the date on the title-page, has only just reached us, is headed (above the title we have quoted) "The Second Danish Pamir Expedition"; and the author, Lieut. Olufsen, of the Danish Army, was chief of both Expeditions. The Expeditions were made with scientific objects, and we gather that this account and illustration of the architecture of the country visited is a side-issue of the Expedition. It is unusual to find a military man taking so much note of architectural monuments and describing them so well. The text is in English; it is perhaps the preparation of an English version which has retarded the arrival of the book, as we presume it would have appeared in Danish in the first instance.

During the second Expedition in 1898-99 the author had time to make a good many excursions into Transcaspia, Khiva, Bokhara, and Turkestan. It is not much that we hear of the architecture of what the author calls "this somewhat closed-in portion of Central Asia"; as to its geographical characteristics some amount of investigation has been made during the XIXth century, but there has been little or no study of its ancient history and culture. Fergusson dismisses Turkestan in a page and a half, from sheer lack of information and illustration, not from want of interest in the subject, as he remarks that the buildings there may form a connecting link between the architecture of Persia and that of the great Mogul dynasty in India, and that these buildings may supply many missing links in history, though he observes that we can hardly expect to find there any buildings of very great antiquity.

Lieut. Olufsen's essay confirms this latter view, though he suggests that information about the architecture of the pre-Islamite Period might be obtained by excavations in the isolated mounds of the steppes between Samarkand and Tashkend, and that much more may remain to be discovered as to the architecture of the early Islam Period:—

"Even if we do not care to go so far back as the Avesta age in Central Asia, in which Buddhism and Christianity also tried to gain ground, but confine ourselves to the Islamitic age, our knowledge of it is very incomplete. From the early Islamitic age, from the time when Arabs in the VIIth century under Rebi-Ibn-ul-Harith made their way into Transoksania, and on their arrival at Bokhara are supposed to have found rich Buddhist temples with idols of gold and silver, and with carved temples adorned with mythical figures, there are now no visible remains; and those which are still existing from the Islamitic middle age, run the risk of disappearing before any proper account of them has been recorded."

The old buildings illustrated in the plates do not, however, supply anything which can be called a missing link in the architectural history of this part of the world. They show the same forms of pointed arches under square heads, with elaborate spandrel decoration in geometric patterns, and the same type of conventionalised floral forms in the smaller decorations, which we are familiar with in the Mahommedan buildings of the Indian Peninsula. The illustration (plate 5) of detail from one of the mosques at Shah-Zindéh, traditionally attributed to Timur, in the XIVth century, might at first glance, except for the shape of the carved column on the right, be taken for a piece of detail from the Taj Mahal. The illustrations showing unfamiliar details are, as far as we can gather (for the descriptive text is not very clearly expressed on this point), from buildings of the modern period. This is certainly the case with the interior of the Assembly Hall in the Shirbeden Palace (plate 22), where the two arcades are carried by short wooden columns with a pinched-in base, and painted with a zebra-like decoration of broad black and white stripes arranged chevron-wise. The most interesting piece of unfamiliar detail, however, is that of the slender wood columns of the verandah in one of the Khan's palaces at Khiva, shown in plate 12. We should like to know the date of this, which is not mentioned, but we gather that it is a building of the modern period, and that it is given as an illustration of the woodwork of the country. Large forests do not exist in the country: the wood chiefly used is apricot and walnut. The slender columns used in this instance to support the verandah, of which we reproduce the illustration (Fig. 1), are of apricot wood, bound round at the narrow neck at the base by an iron ring, which rests upon a sandstone base. Fig. 2 shows the base of a column of the same type, from another palace. Modern or ancient, it is an interesting example of a form of column devised for lightness of appearance, and may form a suggestion which might be worked out further.

Lieut. Olufsen's book, besides being an interesting addition to an architectural library, may perhaps have the result of promoting more architectural investigation in a part of the world rather difficult of access, and which has not been much explored.

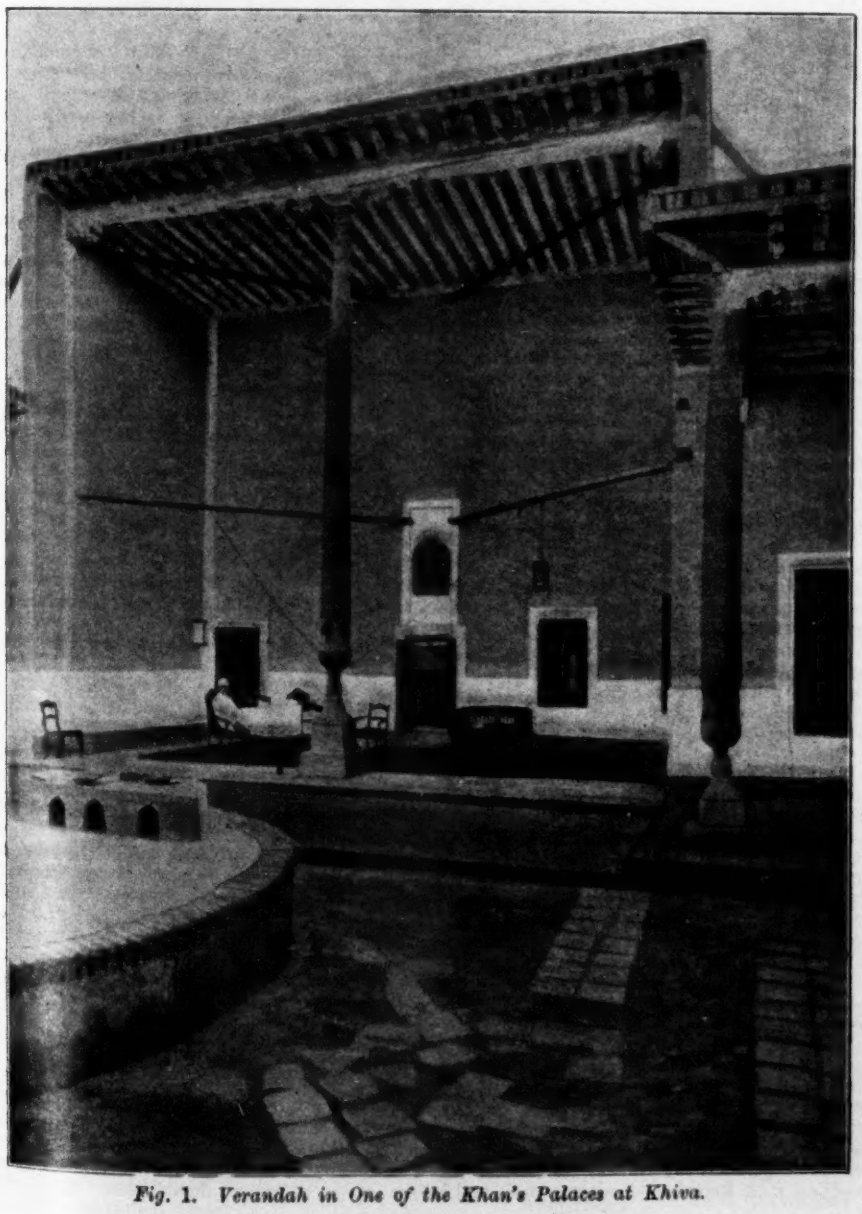


Fig. 1. Verandah in One of the Khan's Palaces at Khiva.

Fig. 2. Base of a Pillar.

Cement and Concrete. By LOUIS CARLTON SABIN, B.S., C.E., Assistant Engineer, Engineer Department, U.S. Army, M.Am.Soc.C.E. (London: Archibald Constable & Co., Ltd. 1905.)

SEVERAL books have been published during the present year on the general subject of concrete, the literature of which has barely kept pace with the rapidly growing use of cement in constructional work of all kinds. It is true that much valuable information is continually published in the technical press, by far the greater portion being found in American and Continental journals. To keep an eye upon all the papers and articles made

public, to purchase copies, to take cuttings, and to classify the data collected means the expenditure of money and time, the former being as great a consideration to the youthful aspirant as the latter is to the busy professional man. Therefore a book in which the latest information is presented in appropriate manner cannot fail to be generally appreciated. The young architect or engineer can scarcely hope to acquire adequate knowledge of cement and concrete by experience, owing to the multifarious purposes to which these materials are applied, and the man in established practice often finds it difficult to follow the development of new theories and experimental records.

In the 500 pages of Mr. Sabin's handbook the card-index system has not been accepted as a model, and those who merely desire categorical answers to given questions may perhaps be a little disappointed. Others, again, who find it necessary to go deeply into the subject will certainly have to supplement the course of reading provided. But we are satisfied that the volume contains ample particulars for the guidance of most cement users, and a feature of merit is that the author has attempted, and on the whole with considerable success, to establish the connexion between theory and practice, as also between experimental and everyday work.

The classification and manufacture of different varieties of cementitious substances, including limes, Portland cement, as well as slag and natural cements, are dealt with briefly but in sufficient detail, for almost anyone can classify such products in his own mind and very few want to become cement manufacturers. The properties of cement and methods of testing are far more essential topics, to which adequate consideration is given, references being made to numerous standard works and transactions of scientific societies where more complete data may be found. In a book published in London, and presumably intended for British readers, it is a little strange to find no mention of the methods of testing, the form of briquette, and the cement specification recommended by the Engineering Standards Committee. Even assuming the bulk of the work to have been written several months ago, it would surely be possible to include some reference to the British standard specification of Portland cement issued in December last. We are always pleased to read American books and to hear about American practice, but our Transatlantic friends who address themselves to the British public ought not to overlook events taking place in the mother country, as too frequently happens.

Coming to practical details, such as the preparation and properties of mortar and concrete, the author says a good deal that may be studied with advantage by young engineers and read with profit by their seniors, although much of the matter is necessarily of very familiar character. We must remark, however, upon the futility of printing so many long tables as there are in this book telling English readers what is the cost of cement, sand, aggregate, and concrete work in the United States. As a matter of general interest and for comparative purposes such data are useful to a limited extent, but they are really of little practical use, and to give prices in dollars is not likely to increase the convenience of the tables.

"Concrete Making," including the proportions of the ingredients and methods of mixing, scarcely receives so much attention as might be expected, and the descriptions of mixing machines—all American—would be far more useful if illustrated by detail drawings. The author has collected much valuable material in the succeeding chapters dealing with experimental results indicating the physical properties of mortar and concrete of different composition. This part of the treatise will quite repay study, and the records presented are fairly up to date.

Part IV., on the "Use of Mortar and Concrete," is an interesting contribution, commencing with articles on timber moulds and the deposition of concrete in air and water. The author then goes on to describe the block system of concrete construction, a title which raises the unfulfilled hope that concrete building blocks are to be discussed as well as the heavy blocks employed in harbour and other large engineering works. Concrete-steel is dealt with in the same part of the volume, the treatment of this important material being somewhat scanty, although it is true that a series of formulæ is given for the design of beams with single and double reinforcement. While the effect of shear is duly pointed out, the author does not give any definite rules for determining the proportions of the reinforcement required to ensure safety against this form of stress. Among special uses of concrete in buildings and pavement construction the reader will find further references to concrete-steel, although written in terms that are far too general to be of much practical utility. The same remark applies to the application of plain and reinforced concrete to sewers, subways, reservoirs, piles, and structures connected with hydraulic engineering. In fact, much of the matter towards the end of the volume consists of little more than a connected series of abstracts from descriptive articles in technical journals, among which the *Engineering News* occupies a prominent place.

The book is well written and arranged in a manner that leaves little to be desired. It suffers generally from deficiency of illustrations, and particularly from the attempt to deal with too many branches of the subject in an inadequate amount of space.

Practical Trigonometry. By HENRY ADAMS, M.Inst.C.E., M.I.Mech.E., F.S.I., late Professor of Engineering at the City of London College. Second Edition, revised and enlarged. (London and New York: Whittaker & Co. 1905.)

ACCORDING to the introductory "Author's Note" this work is not a mathematical textbook, but simply "a short practical aid to the use of trigonometry by professional men." This definition, however, is followed by a hint that the subject-matter is also intended for students preparing for the Surveyors' Institution and kindred examinations. These somewhat contradictory statements may lead to the inference that the author had not quite made up his mind as to the precise class to be addressed, and we are bound to say that any inference of the kind is not without support in the body of the work. To make clear our meaning let us take Section 1 on "Angular Measurement." Here we find so many definitions of elementary truths, with which "professional men" have been familiar from their youth, that it is evident the author is writing for the benefit of novices. But, *per contra*, we find that he passes without explanation some fundamental theorems that ought to be demonstrated, and one or two expressions that ought to be defined, if the book is to be "a practical aid" to students. As an example, we may point out that on p. 2, readers are told that "The unit adopted in measuring angles is the degree (marked °), 360 of which are contained in a complete circle." This "practical aid" can do neither harm nor good to the "professional man," but students ought not to be led to infer that there is only one unit of measurement for angles, for there really are two—the *degree* being the unit in angular measure, and the *radian* the unit in circular measure. The radian is defined a few pages later, when the student gets the opportunity of correcting a wrong impression, which ought not to have been rendered possible by the lack of mathematical precision exhibited by the text. Then on p. 4, it is said that, "apart from some clue to the radius, a degree has no meaning or value." Truly that is a dark saying and enough to drive a student silly, in view of the previous dictum that a degree has a definite meaning and value as a division of a circle. Presumably the author meant to say it has no numerical value in terms of linear measure. Again, on p. 6, we find the suggestion, "it may be remembered that the chord equals twice the sine of half the angle." It would be far more reasonable to suppose the reader to be capable of remembering that a circle contains 360 degrees than to take for granted that the meaning of the term "sine" and its relation to the chord are perfectly understood. There are other references to sines and "natural sines" in succeeding pages, without a word of explanation, such as the student has a right to expect. Then, in the very next chapter, entitled Section 2, the author proceeds to define in an excellent manner what a sine really is. Thus in Section 1 readers are credited with knowing all about sines, and in Section 2 they are supposed to know nothing of them, but even in the latter section, the student is not told what is meant by "natural sines." Such people as are quite ignorant on the subject would certainly like to be told something about the converse condition obviously suggested to the logical mind. Inconsistencies of the kind mentioned do much to detract from the practical value of a book that has many good features—particularly in the sections dealing with the application of logarithms and trigonometrical formulæ—and is written by an author whose useful career as an instructor of technical students is widely and deservedly held in appreciative remembrance by the architectural and allied professions.

The Earl of Mar's Lodging, Stirling. By EX-BAILIE RONALD, with Appendix by John W. Small, F.S.A. (Stirling: Eneas Mackay. 1905.)

MAR'S Lodging, or "Mar's Wark," is a picturesque, ruined building in Broad-street, Stirling, a short distance below the fine Grey Friars' Church. Built by John, Lord Erskine in the latter part of the XVIth century, it is an interesting fragment of Renaissance work, and must have been an imposing building when complete. All that remains now is a portion of the front, with the entrance gateway in its centre, the latter having octagonal towers flanking the entrance, much ornamented by carvings, panels, and grotesques. In the wall, high up over the entrance, is a fine panel with the arms and supporters of Scotland, and on each of the towers panels slightly smaller in size with the arms of the builder and his arms and those of his wife, "impaled."

The series of nineteen plates (with notes thereon forming the Appendix) are called sketch drawings, and are for the most part apparently drawn to scale—when not so, figured dimensions are given. Some of these suffer, unfortunately, from over-reduction, the dimensions and scale being consequently difficult to make out. But they illustrate the building and its details well, and, in addition, a good photograph is added, showing the building as it is at the present time, and a reproduction of a picturesque sketch of Ruskin's, with the apse of the east church in the background.

Reproductions of portraits of the Earl, his Countess, and her favourite son, Sir Charles Erskine, of Aloa, illustrate the first portion of the book, which gives a short account of the lives of the builder and his wife, and many historical details connected with the building. The book is well printed, and is a very complete monograph of an interesting fragment of Scottish architecture.

Truth, Wit, and Wisdom. 525 Letters to the Press, 1887-1903. From the pen of ALGERNON ASHTON. (London: Chapman & Hall. 1905.)

THIS volume consists of the collected letters of a gentleman who seems to have had for a good many years a passion for writing letters to the press to set everybody right about everything, and who, in reprinting these in "book-phorm" (as the author of "The Animal Kingdom" put it), promises to refrain from such practices for the future. Whether it is the author or the publisher who is responsible for the title adopted we know not; it is not a very modest one, and the second term, "Wit," is certainly not apparent except in a very crude form. But we admit that the letters do contain wisdom, or at all events good sense, on a good many points touched upon; and also that the author has served the cause of truth, in a certain sense of the word, in bringing about the correction of various errors of statistics in regard to dates of events, facts in regard to the lives of eminent men, or their burial places, etc. He seems to have a faculty for hunting out small but not unimportant data with accuracy, and people who take the trouble to look out for and correct popular errors of fact are useful in their generation.

Mr. Ashton's æsthetic position we cannot exactly estimate from his letters. In one place we find an indignant protest, in which we entirely concur, against the proposal to destroy Church Row, Hampstead; in another letter he defends that inept and monstrous absurdity, the inchoate Wembley tower—a piece of pure Philistinism. The author

is a musician by profession, and some of his letters dealing with points in musical criticism (mostly in opposition to the current opinions of the day) seem to us very sensible. On the other hand, in one set of letters he displays a most extraordinary ignorance—for a musician—of one of the commonplaces of musical terminology. It is not our business to write about music, but we happen to know the difference between "Sonata-Form" and "Sonata," and Mr. Ashton does not, and got the worst of it in the newspaper controversy thereupon; though, to do him justice, he does not seem the least aware of the fact.

BOOKS RECEIVED.

GOTHIC ARCHITECTURE IN ENGLAND. By Francis Bond, Hon. Associate R.I.B.A. (B. T. Batsford. 31s. 6d.)

MECHANICS OF AIR MACHINERY. By J. Weisbach and Professor G. Herrmann. Translated by A. Trowbridge. (Crosby Lockwood & Son.)

The Student's Column.

STEAM BOILERS AND PIPES.—XXII.

THE FLOW OF STEAM (*continued*).

LAST week we explained the different methods of ascertaining the velocity and weight of steam discharged from outlets on boilers or other reservoirs containing steam at a pressure higher than that of the outer space.

We now give rules for calculating the area of outlet required for the discharge of any given weight of steam into a space where the pressure is not more than 58 per cent. of the initial pressure maintained in the boiler or other reservoir. These rules are simply inversions of formulæ (48) to (53).

Area for weight of steam per second—

$$A = \frac{W}{6{\cdot}16\ D} \quad \ldots\ldots \quad (48a)$$

Area for weight of steam per minute—

$$A = \frac{W}{370\ D} \quad \ldots\ldots \quad (49a)$$

Area for weight of steam per second—

$$A = \frac{W}{6\ D} \quad \ldots\ldots \quad (50a)$$

Area for weight of steam per minute—

$$A = \frac{W}{360\ D} \quad \ldots\ldots \quad (51a)$$

Area for weight of steam per 70 seconds—

$$A = \frac{W}{P} \quad \ldots\ldots \quad (52a)$$

Area for weight of steam per minute—

$$A = \frac{7\ W}{6\ P} \quad \ldots\ldots \quad (53a)$$

As the weights given by formulæ (48) to (53) require qualification by values for the coefficent of contraction, so do the areas obtained by the use of formulæ (48a) to (53a). Thus, if the required area be calculated at 3 sq. in., the corrected area for a short cylindrical mouthpiece would be $(3 \div 0{\cdot}93) = 3{\cdot}23$ sq. in. But, computed by formula (50) or (51), the area for the same discharge comes out at 3·14 sq. in., and the value of 0·95 may be taken for the coefficient of contraction.

The same rules are equally applicable to the computation of the discharge from an outlet at the end of a steam pipe or from an outlet at any point in the length of a steam pipe.

In other words, any steam pipe connected with a boiler constitutes an essential part of the boiler, regarded as a reservoir of steam.

But at the end, or at any point in the length of a steam pipe so connected, the pressure is less than that maintained within the boiler, owing to losses caused by friction (1) in the branch pipe or outlet on the boiler; (2) in valves, bends, and fittings; and (3) in the pipe or system of pipes.

In calculating the required area of the outlet from a boiler, the object is to provide for the delivery of a predetermined weight of steam through the pipe system whether the steam ultimately escapes into the open air or is removed in the form of water.

The predetermined quantity is ascertained by computing the total weight of steam required for the operation of engines and pumps, and in various kinds of apparatus employed for warming buildings, for heating water supplies, for cooking and laundry work, and for sundry other purposes.

When the sum total has been obtained, the required area of the boiler outlet could be correctly calculated by any one of formulæ (48a) to (51a) if it were not for the losses by friction occurring in the pipes and fittings intervening between the boiler and the points of ultimate discharge or consumption.

The various hindrances to flow thus encountered are equivalent to reduction of the outlet area, and must be counterbalanced by increasing either the initial pressure of the steam or the area of the outlet.

Hence we see the importance of inquiring into the extent of the losses taking place in pipes constituting the steam distribution system.

The Flow of Steam Through Pipes.—Formulæ for the flow of steam in pipes can be used for ascertaining the maximum possible flow of steam from a given pressure to a vacuum, or from a given pressure to any other pressure. It is very seldom the case, however, that any practical object is attained by calculating the carrying capacity of a pipe without regard to the pressure maintained at the boiler side of the terminal outlet.

In steam distribution systems the limitation of pressure losses at points of delivery is a primary consideration, and rules such as those with which we are now concerned are almost invariably employed for determining either the loss of pressure for a given discharge or the discharge possible for a given loss of pressure.

Apart from frictional or other losses the velocity of flow of steam through a pipe is governed by the fundamental equation.

$$v = \sqrt{2\ g\ h}$$

Formula (3), p. 301, is a modification of this equation, and will give approximately correct results for the discharge of steam through a straight pipe communicating at one end with a boiler and open at the other end to atmospheric pressure.

Similarly, with an appropriate value for h, it will show the discharge of steam corresponding with any given drop of pressure.

In either case the losses due to the inlet nozzle and to valves, bends, and other fittings must be taken into account. For the moment we omit consideration of these.

The value for h is readily found by the aid of the expression

$$h = \frac{(p_1 - p_2)\ 144}{D}$$

where the factor 144 is introduced to convert pressure in pounds per square inch to pounds per square foot.

Substituting the second term of this equation in formula (3) we have for the velocity in feet per second

$$v = 48\sqrt{\frac{(p_1 - p_2)\ 144\ d}{l\ D}} \quad (54)$$

and, by reduction

$$v = 576\sqrt{\frac{(p_1 - p_2)\ d}{l\ D}} \quad \ldots \quad (55)$$

where p_1 and p_2 = absolute pressures in pounds per square inch, d = diameter in feet, l = length in feet, and D weight per cubic foot of steam at the pressure p_1.

Dividing 576 by the square root of 12 to permit the statement of the pipe diameter in inches instead of in feet, we can make a further reduction.

Thus

$$v = 166{\cdot}3\sqrt{\frac{(p_1 - p_2)\ d}{l\ D}} \quad (56)$$

Example (28).—Required the velocity of flow with a loss of 5-lb. pressure per square inch from an initial absolute pressure of 100 lb. per square inch through a straight pipe having the length of 1,000 ft., and the internal diameter of 3 in.

By reference to Table XXV. we find the value of D for steam at 100-lb. pressure is 0·2307 lb.

The result is worked below by the three forms of the equation above:—

By formula (54)

$$v = 48\sqrt{\frac{(100 - 95) \times 144 \times 0{\cdot}25}{1{,}000 \times 0{\cdot}2307}}$$

$$= 48\sqrt{0{\cdot}8832} = 42{\cdot}39 \text{ ft. per second.}$$

By formula (55)

$$v = 576\sqrt{\frac{(100 - 95)^2 \times 10{\cdot}25}{1{,}000 \times 0{\cdot}2307}}$$

$$= 576\sqrt{0{\cdot}07361} = 42{\cdot}39 \text{ ft. per second.}$$

By formula (56)

$$v = 166{\cdot}3\sqrt{\frac{(100 - 95) \times 3}{1{,}000 \times 0{\cdot}2307}}$$

$$= 166{\cdot}3\sqrt{0{\cdot}065} = 42{\cdot}39 \text{ ft. per second.}$$

To ascertain the weight (W) of steam discharged it is only necessary to multiply the calculated velocity by the internal area of the pipe in square feet and by the weight per cubic foot of the steam at the initial absolute pressure.

$$W = v \times A \times D$$

By combining the second term of this equation with formula (54) we have

$$W = 48\sqrt{\frac{(p_1 - p_2)\ 144\ d}{l\ D}}\ (A \times D)$$

This may be written

$$W = 48\sqrt{\frac{(p_1 - p_2)\ 144\ d\ (A \times D)^2}{l\ D}} \quad (57)$$

where the diameter and length are in feet and the area is in square feet.

Splitting up the expression $(A \times D)^2$ into its component parts we get

$$(A \times D)^2 = (d^2\ 0{\cdot}7854\ D)^2$$

or to permit the statement of d in inches

$$(A \times D)^2 = \left(\frac{d^2\ 0{\cdot}7854\ D}{144}\right)^2 = \left(\frac{d^4\ 0{\cdot}7854^2\ D^2}{(144)^2}\right)$$

In this form the equivalent of $(A \times D)^2$ can be combined with formula (56) as follows:—

$$W = 166{\cdot}3\sqrt{\frac{(p_1 - p_2)\ d\ (d^4\ 0{\cdot}7854^2\ D^2)}{l\ D\ (144)^2}}$$

Whence by reduction

$$W = 0{\cdot}9\sqrt{\frac{(p_1 - p_2)\ D\ d^5}{l}} \quad (58)$$

where W = the weight of steam, of density D in pounds per cubic foot, discharged per second through a pipe of the diameter d in inches, and the length l in feet.

The corresponding formula for the weight discharged per minute is

$$W = 54\sqrt{\frac{(p_1 - p_2)\ D\ d^5}{l}} \quad (59)$$

If, as recommended by some authorities, we take the factor 50 instead of 48 as a multiplier in formula (3) we have, under the conditions stated in connexion with formulæ (54), (55), and (56):—

$$v = 50\sqrt{\frac{(p_1 - p_2)\ 144\ d}{l\ D}} \quad (54a)$$

$$v = 600\sqrt{\frac{(p_1 - p_2)\ d}{l\ D}} \quad \ldots\ldots \quad (55a)$$

$$v = 173{\cdot}2\sqrt{\frac{(p_1 - p_2)\ d}{l\ D}} \quad \ldots\ldots \quad (56a)$$

Whence the discharge per second is

$$W = 0{\cdot}945\sqrt{\frac{(p_1 - p_2)\ D\ d^5}{l}} \quad \ldots \quad (60)$$

and the discharge per minute is

$$W = 56{\cdot}7\sqrt{\frac{(p_1 - p_2)\ D\ d^5}{l}} \quad \ldots\ldots \quad (61)$$

Consequently, we may adopt as approximate rules the following:—

(*a*) Weight of steam discharged per second

$$W = \sqrt{\frac{(p_1 - p_2)\ D\ d^5}{l}} \quad \ldots\ldots \quad (62)$$

(*b*) Weight of steam discharged per minute

$$W = 60\sqrt{\frac{(p_1 - p_2)\ D\ d^5}{l}} \quad \ldots\ldots \quad (63)$$

In undertaking the foregoing demonstration we have not been actuated by an ambition to add further to the innumerable rules that have sprouted from the root $v = \sqrt{2\ g\ h}$, but by the desire to show the manner in which formulæ of the kind are evolved. The explanation is the more necessary for the reason that in most books of reference rules are quoted without the name of any authority, and, what is a far more undesirable omission, without making clear the origin or *raison d'être* of the formulæ. Apart from the risk of error due to the misprints that creep into many text-books, it is important that professional men should know exactly what is the meaning of the formulæ they employ.

For the purpose of comparison we have calculated the subjoined example by formulæ (59), (61), and (63).

Example (29).—Required the weight of steam that can be discharged per minute, with a loss of 5-lb. pressure, through a straight pipe having the length of 1,000 ft. and the internal diameter of 3 in.

Here $(p_1 - p_2) = 5$ lb., $d^5 = 243$, D = 0·2307 lb., and $l = 1{,}000$ ft.

Substituting these values we have

By formula (59)

$$W = 54\sqrt{\frac{5 \times 0{\cdot}2307 \times 243}{1{,}000}}$$

$$= 54\sqrt{0{\cdot}2803} = 28{\cdot}59 \text{ lb. per min.}$$

By formula (61)

$$W = 56{\cdot}7\sqrt{0{\cdot}2803} = 29{\cdot}93 \text{ lb. per min.}$$

By formula (63)

$$W = 60\sqrt{0{\cdot}2803} = 31{\cdot}76 \text{ lb. per min.}$$

Some rules largely used by engineers give results that, for pipe diameters above 3 in., are fully 20 per cent. higher than those to be obtained by formulæ (58) to (63). This fact may be borne in mind when the discharge computed by these formulæ for pipe of a given diameter is a small percentage less than the discharge estimated as necessary for a specified duty. Otherwise we think it safer to accept the lower results so as to have a little margin on the right side with regard to eventualities.

GENERAL BUILDING NEWS.

ST. MATTHEW'S CHURCH, BORSTAL.—The recent consecration of the chancel marks the completion of St. Matthew's Church at Borstal. Messrs. West Brothers, of Rochester, were the builders, the contract price being 1,313*l*. Mr. Margetts, Rochester, was the architect.

ST. JOHN'S CHURCH, NEWBURY.—A scheme for the enlargement of this church has been prepared by Mr. J. O. Scott, the diocesan architect. The improvement will cost about 1,500*l*.

WESLEYAN CHURCH, CASTLE DONINGTON.—The top stone of the new Wesleyan church at Castle Donington was placed on the apex of the spire on the 22nd ult. The new church occupies nearly the whole of the south side of the market-place. The plan of the church is cruciform, the main body of the building consisting of nave and chancel with east and west transepts. The materials of which it is built are red sand bricks with white Derbyshire stone, the latter being selected from the quarries at Coxbench. The east front of the church is flanked by a tower 12 ft. square and nearly 50 ft. in height, containing one of the stone staircases leading to the galleries. The tower is surmounted by an octagonal spire of wrought stone, rising to a height of nearly 100 ft. In the front gable of the church is a mullioned tracered window, which is 20 ft. in height and 16 ft. 6 in. in width. The seating accommodation of the church is for a mixed congregation of 800. The building will be heated by a system of hot-water pipes and radiators. Mr. A. E. Lambert, Nottingham, was the architect, and Mr. Thomas Barlow, Nottingham, was the contractor. The total cost exceeds 6,000*l*. Messrs. Shardlow & Co., Nottingham, have been responsible for the plumbing, connecting of water supply, etc. The heating apparatus was fixed by Messrs. King, of Liverpool; and Messrs. Cook, Nottingham, were the contractors for the plastering, etc.

BAPTIST CHAPEL, GELLI, WALES.—The memorial stones have just been laid of the new Hope English Baptist Chapel, Gelli. The chapel, which will provide seating accommodation for 650 people, is being erected at a cost of 2,500*l*. The contract has been given to Mr. W. Willis, contractor, Ystrad; whilst Mr. W. D. Morgan is the architect.

COUNCIL SCHOOL, LEEDS.—The new council school, which has been erected in Cowper-street, Leeds, was opened on the 24th ult. The building will accommodate alogether 1,520 scholars, and the cost, including site, amounted to 31,200*l*. Mr. Philip A. Robson, architect, of Westminster, prepared the plans for the work.

PROPOSED NEW SCHOOL, INVERARAY.—The Inveraray School Board have approved of plans by Mr. E. J. Sim, clerk of works to the Duke of Argyll, for the erection of a new school for the burgh. The cost is estimated at about 1,500*l*.

SCHOOL, BOLTON.—The new Kay-street Special Council School, which has just been opened, has cost a sum of 5,000*l*. The greater part of the school is of one story, the end next to Clarence-street consisting of two stories and a cellar. The principal or east elevation is to Kay-street, and the north elevation is to Clarence-street. The materials used in the outside work are Withnell best quality brick facings and Ruabon terra-cotta dressings. The classrooms are grouped round a central hall, and the hall is directly accessible from the entrances, which are placed in the Kay-street front. Provision is made for manual instruction and cookery in rooms on the first floor of the two-story wing; these are accessible by stairs from the hall. A room for teachers, separate cloakrooms for boys and girls, and a bathroom are also provided. The floors are of concrete covered with Canadian maple blocks, except in the cloakrooms and entrances, where the finish is granite. The dadoes throughout are of tiles, provided and fitted by Messrs. Pilkington's Tile and Pottery Co., Ltd. Separate playgrounds for the use of boys and girls, together with covered sheds and the necessary conveniences, are formed on the south and north of the school respectively, and small plots of garden ground are also provided for the children's use. The contractors for the complete works were Messrs. J. H. & G. Marsden, Bolton, and Mr. D. Campbell is the architect to the Education Committee.

CHURCH INSTITUTE, CHORLEY.—On Saturday last week Lord and Lady Balcarres opened a church institute in connexion with St. James's Parish, Chorley. The building, from the designs by Mr. Dyson, architect, Horwich, includes a gymnasium, baths, and a billiard-room for two tables. The cost has been about 2,400*l*.

CHURCH HALL, LESLIE, N.B.—A church hall has been opened at Leslie in connexion with the parish church. Built of Dumfries red sandstone in the Renaissance style, the hall is situated on a site in the High-street. It is seated for 300, and has two retiring rooms and a scullery. The woodwork is pitch-pine stained dark, and the windows are filled in with tinted cathedral glass in lead quarries, the north window having plain stone tracery. The heating is by hot water pipes. Messrs. Gillespie & Scott, St. Andrews, were the architects.

SALVATION ARMY CITADEL, AYR.—A stone-laying ceremony took place recently at the new citadel in course of erection for the Salvation Army in Ayr. The new building, which is to cost 2,000*l*., is situated on the north side of the Working Men's Unionist Club, and has frontages to New-road and Weaver-street. It will consist of two halls, with kitchen, retiring-room, and officers' accommodation. The large hall will be provided with an end gallery and will accommodate 400 seniors. Then there will be entrances from both streets, the principal one being from New-road. The hall fo young people is to be placed on the first floor, and will be reached by an entrance in Weaver-street. It will accommodate about 230. The architect is Mr. John Hamilton, Glasgow, and the contractors are:—Mason work, Mr. Robert Hutchison, Ayr; joiner work, Mr. David Kirkland, Ayr; plumber work, Messrs. P. Smith & Son, Govan; slater work, Messrs. M'Ouat & Son, Glasgow. The inspector on the work is Mr. James Morrison.

BANK, MIDDLESBROUGH.—New premises for the York City and County Banking Company, Ltd., have been erected near the Railway Station, Middlesbrough. The lower part of the building, to a height of 24 ft., is built of polished granites, all of which came from Aberdeen, and the upper stories are built of stone, from the quarries near Barnard Castle. The ground floor is occupied by the banking chambers. The floor of the banking hall is laid out in mosaic. The walls are panelled to a height of 9 ft. with Spanish mahogany, and the upper part of the walls and the ceiling are enriched in fibrous plaster. There is also a suite of private offices on the ground floor. In the basement are the strong rooms for the bank. The entrance to the commercial chambers is in Marton-road, where there is an electric lift, which rises to the second floor, as well as a staircase. The first floor contains three suites of offices, each having general and private offices and lavatories. The second floor contains two suites of offices, having general and private offices and lavatories to each. The third floor is occupied by the caretaker's rooms. Messrs. Thomas Dickenson & Son, of Middlesbrough and West Hartlepool, were the contractors; the sub-contractors were Messrs. Alex. Macdonald & Co., Ltd., Aberdeen, granite; Messrs. H. H. Martin & Co., Ltd., Cheltenham, carving; Messrs. Baker Brothers, Middlesbrough, plumbers; Messrs. Graham Brothers, Middlesbrough, electricians; Messrs. Taylor, Middlesbrough, painters; Messrs. J. Lowes & Sons, Durham, mosaic fixers; Messrs. W. & S. Wheater, Ltd., Leeds, plasterers; Messrs. Rule & Son, Sunderland, fibrous plasterers; and Messrs. F. Brady & Co., London, coppersmiths. Mr. H. Barnes, of West Hartlepool, was the architect.

BRANCH LIBRARIES, ST. HELENS, LANCS.—On the 16th ult. the Mayor of St. Helens (Councillor H. Martin) opened the two new branch libraries at Sutton and Eccleston. The new libraries are built in the Renaissance style, from the design of Messrs. Briggs & Wolstenholme, of Liverpool and Blackburn. The main entrance in each case leads through a vestibule into a spacious hall. On the right is a reading-room, measuring 40 ft. by 25 ft., to accommodate eighty readers—a portion of which has been reserved for ladies—which has been so constructed as to allow for a future extension. Between the hall and lending library there are three archways, filled in with glazed screens, and beyond is the borrowers' space, which is 24 ft. by 7 ft. The lending counters extend the full length of the borrowers' space, and are fitted up with the latest types of indicators, librarians' desks, etc. The book racks are arranged to hold about 10,000 volumes each, and at the rear of the borrowers' space the librarians' rooms have been erected. The basements consist of packing-room, book-store, and heating cellar. The lending departments have also been arranged with a view of an extension at a future date, and will then be capable of holding about 20,000 volumes each. The floors throughout, with the exception of the halls and vestibules, are laid with white maple-wood blocks, and the halls and vestibules are laid in red and black tiling. The walls externally are faced with red terra-cotta brick, and internally the walls of the halls, borrowers' space, and vestibule are covered with tiling 5 ft. high. The buildings are enclosed with boundary walls of terra-cotta brick with ornamental railings. The whole of the internal finishings are of pitch pine, and the fittings in oak.

EXTENSION OF BIRMINGHAM COUNCIL HOUSE.—The General Purposes Committee of Birmingham Corporation, in a report to the Council, state that the particulars of the accommodation required by the several Corporation departments, obtained by the committee, were forwarded to Messrs. Aston Webb and Ingress Bell, the consulting architects, with instructions to advise the committee as to how the accommodation required can be provided on the site. The consulting architects, after full discussion with the committee, have satisfied themselves that accommodation which fully meets the requirements of the various committees can be provided without utilising the whole of the site, of which a substantial portion can be left for future requirements. They have allowed for a widening of Edmund-street, between Congreve-street and Margaret-street, to a width of 80 ft., an improvement which the committee recommend. The relative arrangement of the departments has also received full consideration, and it is proposed that the gas department should occupy the Edmund-street side, that the education department should be in Margaret-street, and the health, housing, and tramway departments in Congreve-street. An extension of the art gallery is suggested over the new gas offices, to be approached by a bridge across Edmund-street, leading from the round-room of the present art gallery. The consulting architects estimate the cost of the whole building at 137,000*l*., of which the gas and art gallery blocks absorbs 74,000*l*., the tramways block about 15,000*l*., and the remainder, 48,000*l*., represents the proposed expenditure on the education, health, and housing departments. The consulting architects recommend that preliminary sketch plans be invited, from which not less than six, nor more than ten, should be selected, the authors of which should submit final designs, and should each receive an honorarium of 100 guineas. From the final designs the consulting architects will, in consultation with the committee, select the best design. The committee recommend that they be authorised to obtain plans in accordance with these proposals, and to submit their recommendation as to the final design.

BRADFORD CREMATORIUM.—For some weeks the crematorium which has been constructed by the Bradford Corporation at Scholemoor Cemetery has been completed and has been awaiting the approval of the Home Office and the Local Government Board. The new building has been erected from the designs of the City Architect (Mr. F. E. P. Edwards).

OFFICES FOR THE BRADFORD POOR-LAW GUARDIANS.—During the past few months the offices of the Bradford Board of Guardians in Manor-row have been reconstructed, the work having been carried out by Messrs. Empsall & Clarkson, of Bradford. The whole work, including the cost of the site for the extended buildings, has been about 8,000*l*. The principal contractors have been:—Masonry and bricklaying, Messrs. S. Wray & Co., Bradford; carpentry and joinery, Mr. J. Briggs, Queensbury; plumbing and glazing, Mr. J. H. Clapham; plastering, Mr. Andrew Taylor; fibrous plaster work, Mr. L. Stead; slating, Mr. James Smithies; painting and decorating, Mr. John Gurnell; cabinet work, Messrs. T. Taylor & Son; iron and steel work, Messrs. H. Barrett & Sons; fireplaces, Messrs. Taylor & Parsons; tiling, Mr. J. Swift; locks and metal fittings, Messrs. W. & R. Leggott; electric lighting, Messrs. J. Davis & Co.; electric bells, Messrs. Smith & Croft; office telephones, the National Telephone Company; and the lift, Messrs. Archibald Smith & Stevens, London.

POST-OFFICE, MERTHYR.—The new post-office at Merthyr was opened a few days ago by the Mayor. The building is situate in John-street, directly opposite the exit of the arrival platform of the Great Western Railway Station, and it covers a total area of 8,286 sq. ft. The plans were prepared by Mr. Oldrieve, of his Majesty's Office of Works, but after the building had been commenced that gentleman was transferred to Scotland, and the supervision of the work has devolved upon Mr. J. Rutherford, another architect of the same department. The builders were Messrs. W. Cowlin & Son, of Bristol, and Mr. T. R. Daniel has acted as clerk of the works. The total cost of the premises amounts to something like 12,000*l*. The front of the building to the first-floor level is green Querella stone, the remainder being of brick, with Querella stone dressings to the windows, the apex of the façade bearing the Royal Arms.

In the basement there is a room for general stores and a coal-cellar, with a fireproof chamber, through which all the wires pass into the building. The public office is to the left of the main entrance on the ground floor, there being a private entrance for the staff, and it is a room 31 ft. by 22 ft. 6 in. and 30 ft. in height. The counter extends along the whole width, and the floor in front is composed of terazzo paving. Behind this office is a sorting-room 44 ft. by 30 ft., with a sorting table at which sixteen men can work. Communicating with the public office the postmaster is accommodated with a room 19 ft. by 15 ft. 6 in., with a height of 11 ft. 6 in. The ground floor also contains a room for telegraph messengers, retiring-rooms for clerks and postmen, a postal stores-room, a bag-room, and a lamp-room, with the usual offices, and a yard to which entry is obtained from the road by the side of the Temperance Hall. On the first floor there is a telephone-room 26 ft. by 19 ft., a telegraph instrument-room 18 ft. square, and a ladies' retiring-room. The second floor has a battery-room 16 ft. by 17 ft., an engineers' stores-room 13 ft. by 20 ft., and an instrument and telephone stores-room 27 ft. by 10 ft. 6 in., and a linesmen's-room 15 ft. by 18 ft., from which access is given to the telephone standard flat. The standard is 24 ft. high, and the top is about 73 ft. from the surface of the ground. All the retiring-rooms are fitted with cooking ranges, with gas-stove attachments for use in summer. The premises are lighted artifically by electricity, the installation having been carried out under the superintendence of Mr. Madge by Messrs. Edwards & Armstrong.

MEMORIAL HALL, BANGOR.—The hall erected in Bangor to the memory of the late Marquis of Dufferin and Ava was opened on the 23rd ult. The site of the hall occupies a position in the Hamilton-road, adjacent to the parish church. The new building is designed in the early Jacobean style with red brick walling and dressings of Dumfries sandstone. An area is formed in front by recessing the main front 15 ft. The plan comprises on the ground floor a vestibule, cloakroom, two classrooms, and minor hall 40 ft. square. Access is obtained to the large hall by two staircases, placed at each end of the vestibule, with additional stairs on each side of the platform. The dimensions exceed 80 ft. long by 40 ft. wide, covered with an open timber roof rising to a height of 50 ft. to ridge from ground level. A three-light window, filled with tracery, and flanked with small mullioned lights, forms the central feature of the recessed gable of the front elevation. The upper part of the gable is filled with heraldic treatment of the coat of arms and achievements of the late Marquis of Dufferin and Ava, carved from a design supplied by Mr. John Vinycomb. The staircase turrets are crowned with domical roofs, covered with lead. All the windows are filled with leaded glass. The plumbing work was entrusted to Mr. M. Morrow, and Messrs. Ward and Partners made the lead lights. The heating has been done on the low pressure hot water system by Messrs. Mackenzie & Moncure, Ltd., Edinburgh; and Mr. J. Winter executed the carving. The railing and collapsible gates were supplied by Ritchie's Structural Iron Works, Belfast. The contractor for the entire work was Mr. James Savage, Bangor. The architects were Messrs. Young & Mackenzie, Belfast.

INSTITUTE PREMISES, NEWMILL, N.B.—The block of buildings just erected at Newmill for a hall, library, and reading-room were opened recently. The premises were designed by Mr. Wederspoon, architect, of Ballifeary, Inverness, and the following is a lsit of the contractors:—Mason, Mr. Alex. Innes, Glen of Newmill; carpenters, Messrs. G. & R. Cameron, Keith; plasterer, Mr. George M'Kay, Keith; plumber, Mr. R. Douglas, Huntly; painter, Mr. John Symon, Keith; slater, Mr. Alex. Strachan, Keith.

WORKING GIRLS' CLUB, HULL.—The premises originally known as "Home Bay Almshouses," in Madeley-street, Hull, have been re-opened as the Hull Working Girls' Club and Boarding Home, after having undergone various alterations at a cost, including furnishings, of about 2,000*l*. The architect for the work was Mr. Bilson.

IMPROVEMENTS, BRIXTON.—Brixton Hill and New Park-road are to be widened, the former to 100 ft. and the latter to 50 ft. A block of buildings is also to be erected from the designs of the architect, Mr. Hugh Mackintosh. The surveyors are Messrs. Douglas Young & Co., of London.

CLUB PREMISES, HOVE.—Messrs. Albery & Lawrence have prepared two sets of plans for a new club-house to be built in the New Church-road, Aldrington. One of these provides for a building with reading-room and club-rooms, secretary's-room, and the usual offices on the ground floor, and a billiard-room with two tables, chess-room and card-room on the first floor. It is proposed to provide bedrooms on the first floor, and provision has been made for four bowling rinks, a quoit green, and a putting green in rear of the club-house. An alternative plan provides for two rinks and a club-house with a narrower frontage, but with similar accommodation. The cost is estimated at about 3,500*l*.

STAINED GLASS AND DECORATION.

WINDOW, ST. EBBE'S, OXFORD.—The chancel window of the Church of St. Ebbe's, Oxford, has been fitted with stained glass to the memory of the late Bishop of Lahore. The centre lights of the window have the subject of the Ascension, the side lights contain figures of St. Thomas and St. Aidan, with two subjects below—the Instruction of Native Teachers, and the Rite of Confirmation by the Bishop. The arms of his college and the See of Lahore are placed in the tracery. The window was designed and executed by Mr. T. W. Camm, of Smethwick (Birmingham).

WAR MEMORIAL, WARRINGTON.—A tablet has been placed in the lecture-room of the new quarters at the drill hall, Warrington, to the memory of the Warrington Volunteers who served in the South African War. The memorial is of Austrian oak, and consists of nine panels, measuring altogether 7 ft. 6 in. high and 11 ft. wide. Messrs. Hesketh & Sons executed the work.

COMMUNION TABLE, ST. ALBANS CATHEDRAL.—A communion table for use at the high altar screen has been presented to the St. Albans Cathedral by Lord Aldenham, and has been placed in position. The table, which is of solid oak, has been executed by Mr. Harry Hems, of Exeter, from designs by Mr. Blomfield. The floor of the sacrarium has also been laid with slabs of Belgium black, Sicilian white, and Purbeck grey. This work was carried out by Messrs. Lee Bros.

SANITARY AND ENGINEERING NEWS.

SEWAGE SCHEME, BRADFORD.—The Sewage Committee of the Bradford Corporation held its first meeting of the new municipal year at the Town Hall on the 23rd ult., and the chief business related to the sewage scheme in connexion with the Esholt estate, and the recent arbitration award of 239,742*l*. as the purchase price of the estate. It was decided to seek borrowing powers for 275,000*l*., to cover the cost of the Esholt purchase and of other lands acquired in connexion with the scheme. It was also agreed to seek powers from time to time to cover further purchases which still remain to be made. Mr. Garfield, the sewage engineer, was instructed to prepare plans of the sewage disposal scheme, for submission to the Local Government Board, whose approval has to be obtained. The Committee also decided to appoint three assistant engineers at a salary of 150*l*. a year each, to help in carrying out the work.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENT.—Messrs. Knightley & Battenbury, architects, are relinquishing their offices at 106, Cannon-street, E.C., and their practice will be wholly transferred to and continued at Birkbeck Bank-chambers, Chancery-lane, W.C.

THE NELSON COLUMN.—The statement in our short article on this last week, that the column was 11 ft. 7¼ in. diameter at the summit and 10 ft. 1¾ in. at the base, was of course a slip of the pen on the part of the writer of the article, which escaped our notice. He inadvertently wrote "summit" where he should have written "base," and *vice versâ*.

ELECTRICITY IN WOOLWICH ARSENAL.—Colonel Holden, F.R.S., read a paper last week to the Institution of Electrical Engineers on the "Applications of Electricity in the Royal Gun Factory at Woolwich." As the electric driving of machines and tools is now rapidly becoming the rule instead of the exception for factory work, he laid particular stress on several of the novel methods he has recently introduced into the Arsenal. As guns ranging from 3 cwt. up to 60 tons weight, with all the elaborate parts of their breech mechanism, are manufactured, it is necessary to have a very large range of machine tools. As some of the boring machines are 50 yds. long, and the bed-plates of some of the lathes are nearly 100 ft., very large motors are sometimes required. The use of electricity has doubled the output per week. We were interested to hear that magnetic clutches are extensively used. The magnetic clutch is practically a friction clutch, but, unlike the ordinary mechanical clutch, it can be operated from a distance quite conveniently, and it cannot possibly stick or seize. All the workmen's tools are ground for them. This custom is rapidly being adopted in many modern workshops, and leads to increased efficiency. The carborundum grinders for high-speed tool steel are found to be the best. Carborundum itself is an electrical product. The problem of measuring the want of truth in the bore of a gun 45 ft. long is a difficult one. It is solved by using a tapered steel tube carrying a knife-edged contact wheel. The moment this wheel touches the side of the bore it completes an electric circuit, and a galvanometer deflects. Another interesting application is the use of an electro-magnet, 10 in. in length, for lifting cast-iron projectiles, some of which are very nearly a ton in weight. The measurement of the temperature of the furnaces in which the steel is heated is made by means of a thermo couple, and this seems to be a very satisfactory method. The zero of the scale is the temperature of boiling water, and it is calibrated by noticing the temperatures at which various pure metals melt. The horse power of the motors at present in use at the factory is about 2,000, and motors of a capacity of a 1,000 horse power are ready to be connected with the supply mains when power becomes available.

THE PRESERVATION OF SCENERY IN SWITZERLAND.—At a meeting held last week at Sion College, Sir Martin Conway being in the chair, a committee and officers were nominated, with Sir Martin Conway as President, to establish in England a branch of the "Ligue pour la Conservation de la Suisse Pittoresque." The Chairman, the Bishop of Bristol (President of the Alpine Club), Sir Frederick Pollock, and others who addressed the meeting, directed attention to the increasing intrusion of tourist trains into the most beautiful portions of the scenery, the invasion of vulgar advertisements, and the defacement of the mountain peaks and valleys with "blatant hotels" and other ugly manifestations of "l'exploitation égoiste." Sir Alfred Wills mentioned that amongst the most recent schemes were railways up the Rosenlaui valley over the Great Scheidegg; across the Furca Pass; and through the Zinal valley and the Tête Noire to Chamounix, piercing the Obergabelhorn and descending the Trift valley to Zermatt; and an over-head railway from Grindelwald to the ice-fall on the Lower Glacier. Pastor Braendli, speaking on behalf of Swiss residents in London, testified to their hearty sympathy with the objects of the meeting. The nominated vice-presidents of the branch of the "Ligue" are the Bishop of Bristol, Mr. Bryce, M.P., Mr. C. T. Dent, Mr. Francis Galton, F.R.S., Lord Monkswell, Dr. Blake Odgers, K.C., Sir F. Pollock, Mr. G. W. Prothero, Canon Rawnsley, Mr. F. F. Tuckett, and Mr. Justice Wills. Mr. E. W. Hallifax, of Burton Bank, Mill-hill, N.W., was appointed secretary to the committee.

INSTITUTE OF BRITISH DECORATORS.—At Painters' Hall on Tuesday, the 21st ult., Mr. H. D. Searles-Wood gave a brief sketch of the "Development of Modern Architecture" to members of the Institute of British Decorators. The lecturer touched on the various changes of style in the last century, the Gothic revival, due to the reaction from the straight-laced classic of Georgian times, and helped on by the Exhibition of 1851, the battle of the styles, and the gradual evolution to the present custom, which practically reserves the Gothic style for ecclesiastical work, a free Renaissance classic treatment for public buildings, and "Elizabethan" for domestic work; the chief *motif* of modern domestic work being picturesqueness. A series of slides, reproduced from various building papers, were then thrown on the screen in rapid succession, comprising the work of a large number of well-known architects—Messrs. Norman Shaw, Ernest George, Beresford Pite, Leonard Stokes, Collcutt, Aston Webb, etc.—and an interesting collection of views of a house at Sonning, by Mr. Lutyens. These were followed by a series of slides of public buildings. The rapidity with which the illustrations were flashed on the screen, necessitated probably by the large number shown, prevented the retention of any very clear ideas on the various buildings, but gave one a good idea of the general character of the work of modern English architects. Mr. Sutherland, who moved the vote of thanks, was of opinion that modern work erred in the direction of non-assertion, and sacrificed itself to a plethora of detail. Another speaker thought that, although a house was for people to live in, more people look at it than live in it, and consequently more attention should be paid to the exterior. The Chairman, Mr. J. D. Crace, in the course of his remarks, thought that modern domestic work was rather too apt to develop into imitation of the picturesque farm-house style, and he did not believe that any architect would go down to posterity as the builder of picturesque farm-houses.

CARPENTERS' COMPANY: SANITARY BUILDING CONSTRUCTION EXAMINATION.—The following is the list of the successful candidates in the order of merit: Silver medals—F. E. Drury and E. Middleton. Bronze medals—F. Wilson, G. Allibone, L. P. Roberts, J. K. Borgars, F. F. Fulker, and H. W. F. Webb. Certificates—J. Lewis, E. A. Williams, H. S. Butler, A. H. Taylor, J. Halliday, T. W. S. Hall, J. E. Bargate, A. T. Barry, J. W. Overend, J. E. Sudds, W. G. Wellbelove, A. J. Pyle, Wm. Symmonds, F. W. Barnacott, W. Terrell, J. E. Jones, Chas. Vawser, G. Davies. The number presenting themselves this year exceeds that of any previous year since the examinations were instituted, with one exception. The candidates included men from New Zealand, the Gold Coast, Scotland, Wales, and various towns in England. The examiners present, besides Mr. Willson (Past-Master of the Company) and Mr. Slater, included Mr. Belcher, A.R.A. (President of the Royal Institute of British Architects), Mr. Guy Dawber (President of the Architectural Association), Professor Henry Robinson, and Dr. A. Wynter Blyth, Medical Officer of Health for Marylebone.

AN "OPEN SPACE," OXFORD UNIVERSITY-BUILDINGS.—At a recent meeting of the members

of Convocation a decree was rejected by 136 votes to 55 which, if it had been passed, would have made over the Proscholium, commonly known as the "Pig Market," as a stand for bicycles. The "open space" is the vaulted ambulatory near the Divinity School and under a part of the Bodleian Library in the old school's quadrangle. The Curators of the Bodleian were strongly opposed to the appropriation of the area for the purposes contemplated, whilst the Curators of the University Chest advanced certain claims to authority over the floor of the Proscholium in virtue of a statute of 1898, which confers upon them the oversight and care of open spaces in that portion of the University buildings.

SITES FOR NEW PROVIDED SCHOOLS, LONDON.—There has just been issued the schedule of sites which it is proposed to take for purposes of the Education Acts, 1870-1903, and the erection of new school buildings in the administrative county of London. The sixteen sites cover an aggregate of 373,010 sq. ft., or nearly 8½ acres. The largest site scheduled is a parcel of land of about 87,120 sq. ft. at the junction of Standen and Wimbledon Park roads, having a frontage of 484 ft. to the latter road. In Islington Borough five sites are specified, one comprising thirteen houses in Packington-street, with five in Linton-street, and another including Nos. 140-2, Cloudesley-road, with portions of the gardens of eighteen houses in Cloudesley-road. A site in Paddington embraces the Clifton nursery-ground and the approach thereto, and Nos. 39-43, Blomfield-road, Maida-vale. The remaining sites are in the boroughs of Deptford—Alverton-street; Hackney—Nos. 16-30 (even) Lansdowne-road, and eight houses in Derby and Rutland roads; Poplar—seven houses and the court thereof in Bright-street and Bromley-cottages; St. Marylebone—Nos. 9-21, Aberdeen-place and No. 21, Carlisle-place; St. Pancras—Camden-street; and Stepney—three sites, being Nos. 47-57 (odd) Pigott-street, Limehouse, premises in Commercial-road East, with lands abutting on Back Church-lane and Gowers-walk (near Leman-street), and property in Ropery and Carter streets. Six of the properties to be acquired adjoin existing school premises.

Legal.

INJUNCTION GRANTED AGAINST TRADE UNION.

THE case of Thomas Wallis & Co., Ltd., *v.* United Society of London French Polishers came before the Court of Appeal, composed of the Master of the Rolls and Lord Justice Mathew, on the 27th ult., on the appeal of the defendants from an interlocutory injunction granted by Mr. Justice Bray.

Mr. Mulligan, K.C., Mr. P. T. Blackwell, and Mr. Martin O'Connor appeared in support of the appeal; and Mr. Horace Avory, K.C., Mr. A. F. Wootten, and Mr. E. C. Bliss for the respondent company.

Mr. Mulligan said the order appealed from was an interlocutory injunction granted by Mr. Justice Bray, restraining the defendants, a trade union, from watching or besetting the premises of the plaintiffs in Holborn so as to cause a nuisance. The circumstances giving rise to the litigation were as follows:—The plaintiffs were the well-known furnishing firm in Holborn—a corporation with a capital of 350,000*l.* and upwards of 1,700 shareholders. The plaintiffs had a contract with the London County Council, the contract containing a clause that the plaintiffs were to pay the trade union wages. For many years prior to this contract the French polishers working for the company were paid at the rate of 9d. an hour. On July 8 last the company gave the polishers who were in their employment notice that after a certain date the company would only pay 8d. an hour. On July 20 the company's manager had an interview with the polishers on the premises, and as a result of that interview the polishers that night struck work because of the reduction. On July 29 the defendant union employed some of the polishers to walk up and down opposite the plaintiffs' premises, and these men had in their hats a card with the following words on it—"Pickets. Wallis & Co.'s French polishers on strike against reduction of 1d. an hour in wages." On July 29 defendants, having ascertained that the contract between the company and the London County Council was in existence, wrote a letter to the Council to the effect that the company had reduced the wages and were not paying the proper rate of wages. The writ in the present action was issued on October 4 for an injunction to restrain the defendants, their servants, agents, etc., from watching or besetting the premises of the plaintiffs or the approaches thereto, or causing or procuring the same to be watched or beset in such a manner as to cause a nuisance to the plaintiffs, or for any purpose except to obtain or communicate information. Those were the exact terms of the *interim* injunction which had been granted by the learned judge on October 13. The defendants admitted the men walked up and down the footway with the card in their hats, but there was no evidence that any of the men spoke to any customers of the plaintiffs or interfered with or caused any obstruction or damage to anyone.

Mr. Avory stated that the plaintiffs' case was that the French polishers were paid 9d. an hour, and they asked for an extra 1d. an hour for travelling money when they were employed at Westminster Bridge-road, and the plaintiffs dismissed them.

Mr. Mulligan said the men were entitled to walk up and down opposite the plaintiffs' premises for the purpose of getting and communicating information. He submitted that there was no evidence that the men had "watched or beset" the plaintiffs' premises within sect. 7, subsect. 4, of the Conspiracy and Protection of Property Act, 1875. He further submitted that the injunction was too formal, and that it ought only to restrain the defendants from doing particular acts.

Mr. Blackwell followed on the same side.

Without calling upon counsel for the plaintiffs, the Master of the Rolls, in giving judgment, said that Mr. Justice Bray came to the conclusion from what was stated in the affidavits that there had been a wrongful watching and besetting without legal authority, and that it did not come within the proviso to sect. 7. He (the Master of the Rolls) thought there was abundant evidence to justify that conclusion, and that the injunction granted was the proper remedy.

Lord Justice Mathew concurred, and the appeal was accordingly dismissed.

DISPUTE AS TO DEVELOPMENT OF BUILDING ESTATE.

IN the Chancery Division, on the 27th ult., the case of Hurrell and others *v.* Beauchamp and others, came before Mr. Justice Swinfen Eady.

Mr. Eve, K.C., and Mr. Sheldon appeared for the plaintiffs; and Mr. Upjohn, K.C., and Mr. Dunham for the defendants.

Mr. Eve said that the plaintiffs were Mr. Hurrell, Mr. Schellebear, Captain Buchanan, and Admiral Wilson, and the action was brought by them for an injunction to restrain the defendants from proceeding to develop an estate abutting on the main road from Devonport to Tavistock, in the immediate proximity of the plaintiffs' houses. The plaintiffs claimed under conveyances executed in or about the year 1858 to their predecessors in title. The defendants had acquired the residue of the estate, and what they proposed to do was, according to plaintiffs' case, inconsistent with the original scheme under which the estate was laid out. The defence was that the original scheme—if there was one—had been abandoned, or, in the alternative, if it had not been abandoned that the plaintiffs had acquired in breaches which had operated to free the rest of the land. The defendants also pleaded the alteration of the neighbourhood by reason of the increase and spreading of the borough of Devonport. What they were now proposing to do was to erect a large number of small four-roomed artisan dwellings in the immediate vicinity of the plaintiffs' houses.

As counsel was proceeding to read the terms of the deed upon which the plaintiffs relied it was announced that a settlement had been arrived at between the parties on terms as to the division of the estate which would include the removal of all restrictions except that no public-house should be erected.

BECKENHAM BUILDING DISPUTE.

THE hearing of the case of Whitehouse *v.* Hugh concluded before Mr. Justice Kekewich, in the Chancery Division, on the 24th ult., an action brought by the plaintiff, a market gardener, carrying on business at No. 19, Mackenzie-road, Beckenham, to restrain the defendant from building on a roadway adjoining the plaintiff's premises, in alleged contravention of a building scheme adopted by the Birkbeck Freehold Land Society in 1878, and from interfering with plaintiff's user of the roadway. The plaintiff also sought to restrain the defendant from building so as to obstruct his ancient lights.

It appeared that the plaintiff purchased the freehold of his premises from a Mr. Chamberlayne in 1885. At this time the north-western boundary of plaintiff's premises was laid out as a road which led from Mackenzie-road to a level crossing on the London Chatham and Dover Railway. The plaintiff's house was built on plots 351 and 352, two out of three plots purchased from the society by Mr. Chamberlayne in 1879. On the plan in the conveyance by the society to Mr. Chamberlayne the roadway was designated as a vacant space between lots 352 and 355. By the conveyance the society reserved to itself the right of allowing a variation in the plans and conditions. The roadway had only been roughly made up, and, by reason of its not being much used, had been allowed to fall out of repair. This road, after it crossed the railway, led to a meadow, to which there was no other means of access for vehicles. In 1894 the society purchased and laid out the meadow as a building estate, and by an arrangement the railway company were released from maintaining the level crossing, and the company subsequently removed the gates of the crossing and erected an iron fence without gates. In 1897 the society erected a fence at the Mackenzie-road end of the roadway, and conveyed the plots occupied by the roadway to the defendant's predecessor in title, and since that date there had been no means of communication between Mackenzie-road and the roadway, except by a gate in the fence, which was kept locked. The defendant, in 1904, purchased from plaintiff's predecessor in title No. 21, Mackenzie-road, which was built on plot 355. He also purchased plots 353 and 354, over which the roadway passed, and in November last he commenced to dig up the roadway for the purpose of laying the foundations of two houses he proposed to erect. The plaintiff alleged that defendant by so building was depriving him of the use of the roadway and the light and air coming over it to his premises. He also said that when the defendant's buildings were completed they would so interfere with the light coming to his premises as to constitute an actionable nuisance. Plaintiff further said that the society had dedicated the roadway in question to the public.

After hearing the evidence and the arguments of counsel, his lordship held that no representation had been made that there was a road or that the vacant space between lots 352 and 355 should remain vacant. It could not be said that the society could not allow defendant to build houses on plots 353 and 354, and, therefore, plaintiff was not entitled to restrain the defendant from so building. He held further that upon the question of dedication to the public of the road the plaintiff's case completely broke down, and that there would be no such obstruction as would substantially lessen the plaintiff's comfortable enjoyment of his house. He accordingly entered judgment for the defendant with costs.

Mr. Stewart Smith, K.C., and Mr. Todd, appeared for the plaintiff; and Mr. P. O. Laurence, K.C., and Mr. Cozens-Hardy, for the defendant.

LIBEL ACTION BY A BUILDER AND CONTRACTOR.

THE hearing of the case of McCarthy *v.* McCarthy and Rochford, concluded in the King's Bench Division before Mr. Justice Wills and a special jury on the 28th ult—an action by the plaintiff, Mr. Patrick McCarthy, a builder and contractor, carrying on business in the Fulham-road, S.W., to recover from Mr. J. A. Rochford, a War Office clerk, and Mr. Michael McCarthy, a builder and contractor, carrying on business in the Kings-road, Clapham Park, damages for libel, one alleged libel being printed and published in the *Chelsea Mail* and the *Westminster Express*, and the other sent to the Editor of the newspapers. The plaintiff also said that the defendants had entered into a conspiracy to libel him, and on that head also he claimed damages. Both the defendants pleaded a denial of the conspiracy, and the defendant McCarthy also denied the publication of the letters complained of. The defendant Rochford denied that he wrote the letter printed in the newspapers, but as to the second letter pleaded justification.

Mr. Duke, K.C., and Mr. Haydon, appeared for the plaintiff; Mr. Shee, K.C., and Mr. E. Symons for the defendant Rochford; and Mr. Montague Shearman, K.C., and Mr. Macpherson, for the defendant McCarthy.

Mr. Haydon, in the course of opening the plaintiff's case, said that his client was the nephew of the defendant McCarthy, both being builders and contractors. Both the McCarthys had been in partnership together, but in 1901 disputes having arisen, the plaintiff brought an action against his uncle, and this resulted in the uncle having to make a payment of money to his nephew. After the partnership was determined the plaintiff started business in the same locality in which his uncle carried on business. The rivalry between them came to a head in August 1903, when the London County Council invited tenders for the painting of Chelsea Bridge. Both the plaintiff and his uncle sent in tenders, but the plaintiff obtained the contract. The work proceeded satisfactorily until a series of attacks in the local newspapers were directed against the plaintiff as to the way in which the work was being carried out. From that time the relations between the plaintiff and the London County Council underwent a change. The defendant Rochford was a friend of his co-defendant, but he had not the slightest practical experience in the painting of bridges. The first libel of which complaint was made was contained in a letter published in the newspapers in question on September 18, 1904. The letter was signed "Ratepayer," and, amongst other things, contained the following passage:—"Work such as this should be entrusted to well-known and substantial tradesmen, who are able to cope with the elementary engineering difficulties of so big a work, either with the requisite plant or financially. If, however, the London County Council, in their wisdom, do not so deal out work, then they should protect the ratepayers by seeing that good value in labour and material is given by ensuring

best and most adequate supervision over the contractors employed." In the second letter, written by Rochford, but not published in the newspapers, the writer criticised the way the work of cleaning and painting had been carried out by the contractor, and he referred to the flimsy character of the scaffolding which had been erected.

The plaintiff, called and examined, said that the work was begun in August, 1903, and it was carried out under the supervision of a Mr. Simmons, the clerk employed by the London County Council. No trouble was experienced in carrying out the work until the libel appeared. After it the clerk insisted on his doing everything that was unreasonable. He had to reconstruct the scaffolding and to put up scaffolding over the whole bridge at the same time, which he could not use. The work cost a good deal more than it ought to have done owing to the letter of September 18.

Cross-examined by Mr. Shee,

He did not think it was the Council which was being criticised in the letter so much as the contractor.

Robt. Standidge, a scaffolder, examined, said that the scaffolding on Chelsea Bridge was done in the ordinary way.

Several other witnesses were called, who gave evidence that the scaffolding used was of a satisfactory character.

At the close of the plaintiff's case the first witness called for the defendant Rochford was Mr. W. C. Copperthwaite, Bridges Engineer to the London County Council. He said that at first the scaffolding was not of sufficient strength, and during the progress of the work it was altered and made stronger. Before the letter of September 18 he had received complaints from Simmons, and had complained to the plaintiff about the quality of the paint in August.

Mr. H. Tyers, Editor of the *Chelsea Mail* and *Westminster Express*, examined, said he put a notice about the work upon the bridge in the papers, issued on September 11, but Rochford had nothing to do with that notice. Between September 11 and 18 he met Rochford, and, as he had complaints with regard to the work on the bridge, he asked Rochford to let him know his opinion about it. Rochford told him his views, and witness made a note of them. Witness himself compiled the letter from the various complaints he had received. The defendant McCarthy had made no complaints to him about the bridge. The second letter was handed to witness by Rochford, but was not signed. He did not publish that letter as he thought the matter had become stale. The defendant McCarthy had no part in the second letter so far as witness was concerned.

Mr. James Rochford, the defendant, examined, said that after seeing the notice about the bridge in the *Chelsea Mail* he met Mr. Tyers, and told him he thought it was a fair summary of what was going on. The notes he gave to Mr. Tyers contained his honest opinion of the work. The matter was common talk. There was no conspiracy between himself and the defendant McCarthy to libel the plaintiff.

At the close of defendant Rochford's case Mr. McCarthy, the other defendant, was called. He said that he took no part in the letter of September 18, nor did he supply any information upon which it could be written. He had no connexion with the letter written by Rochford. He did not instigate Rochford to write any letter, nor had he conspired with him for the purpose of libelling the plaintiff.

Cross-examined by Mr. Duke,

For some years he and the plaintiff had not been on good terms. The plaintiff being his nephew, he was not anxious to do him any harm. He could not say whether the work on the bridge was being done properly, nor could he say whether the scaffolding was properly done. He never discussed with Rochford the fact that the plaintiff had obtained the contract. Rochford told him there had been communications to the newspapers about the plaintiff's work. He did not know that Rochford was interesting himself in the matter. He never saw Rochford's letter.

This being the case for the defendant McCarthy, Mr. Tyers was recalled to be further cross-examined by Mr. Duke. He said that to the best of his belief he wrote the letter on September 18. As soon as he heard of the scaffolding being insufficient he consulted three experts, and, as far as he could remember, compiled the first notice in his paper from information he received from them. The letter of September 18 was partly the result of Rochford's communication to him.

Two compositors of the *Chelsea Mail* gave evidence to the effect that the letter of September 18 was not in the handwriting of the Editor.

At the conclusion of the addresses of counsel, and the summing-up of the learned judge, the jury returned a verdict for the defendant McCarthy on the question of libel, and a verdict for the plaintiff against the defendant Rochford with one farthing damages.

On these findings his lordship entered judgment for the defendant McCarthy with costs, and for the plaintiff against the defendant Rochford without costs.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

25,162 of 1904.—D. RUSSELL: *Fireplaces.*

This relates to a fireplace, and consists in the employment of a fuel-holder comprising a base member formed of an iron grating and a fire-clay slab, and upstanding side portions and back portion.

28,483 of 1904.—P. R. J. WILLIS (J. E. ERICSON): *Flushing Apparatus for Water-closets and Urinals.*

This relates to a flushing apparatus for water-closets and urinals, and comprises a hollow casing attachable to a closed tank and source of water supply respectively, a valve on a valve seat within the casing, a system of levers arranged beneath the valve and having a bowl or the like suspended therefrom, the position of said bowl or the like being such that it will be depressed by a forcible flow of water through the casing, and retain the valve open after it has been initially opened, and means such as a rock shaft carrying a cam for initially opening said valve.

28,963 of 1904.—H. HIRST and F. T. CASH: *Heat Radiating Apparatus for Warming Rooms, Offices, and the like.*

This relates to a heat radiating apparatus having the frame work in the main body constructed of fireproof wood, and the provision of tubes or equivalent means for the diffusion of heated air.

771 of 1905.—A. J. BOULT (P. A. GASSE): *Flues of Fireplaces, and the like.*

This relates to the combination with a stoneware or terra-cotta frame, for building into the flues of fireplaces and the like, of a tile or cover of stoneware, terra-cotta, or the like, for closing the aperture in the frame after the pargeting of the flues is finished and the *débris* removed therefrom.

2,748 of 1905.—T. F. ASH: *Chimney and Ventilating Shaft Tops.*

This relates to the combination in a ventilator composed of a series of curved shields radiating from a common centre and bent over and wider at their outer sides than at their fixed or pivoted ends, of the type applicable to a ventilating shaft or chimney-top, of horizontal, vertical, or oblique flanges extending from the lower edges of the said shields downwards, vertical or oblique flanges extending from the upper edges of said shields upwards, and vertical or oblique flanges extending from the side of the final covering shield downwards.

3,634 of 1905.—E. J. KIS: *Moulding Machine for Cement Blocks, and other articles.*

This relates to a machine for the production of shaped articles from cement, concrete, or the like, by stamping in a mould, the arrangement consisting of revolving stops in the outlet openings of feeding hoppers placed above the mould, which stops are brought into the open position by the raising of the stamp, so that a definite volume of material, carried round by the stops, can be fed to the mould for each stamping operation.

3,648 of 1905.—E. G. WRIGHT: *Chimney-Top.*

This relates to a system of treating a stack of smoky chimneys with one or more flues as one, and consists of a chamber or casing tapering upwards, and fitted on the top of the stack, which can be swept from the top without danger to the sweep, and also obviate the unsightly look of different kinds and heights of cowls.

5,621 of 1905.—J. SHANKS: *Cisterns made of Earthenware, Stoneware, Fire-clay, or like materials.*

This invention consists in forming a cistern of earthenware, stoneware, fire-clay, or the like material, with an inturned flange around the open top, all of the corners being preferably also rounded. The flanged formation of the open top provides such rigidity of the structure that in the operation of firing the ware it is not liable to such warping as is usual.

8,144 of 1905.—P. KEMP: *Window-Sashes.*

This relates to window-sashes, and consists of devices for securing the batten rod and sash when closed, and comprises a striking plate on the hinged batten rod in combination with a pin, peg, or screw fitted to project inwards from a vertical rail of the sash.

8,635 of 1905.—R. ROUGHTON and F. W. CROSS: *Sliding and Reversible Window Sashes and Frames.*

A reversible sliding sash for windows and the like, consisting in the combination with each sash, of suspended sliding bars pivoted to the sides thereof in such a manner as to approach or recede from the sash when the latter is being swung, and separate movable draught bars lodged in the window frame between the sashes, which normally hold the sashes vertical and cover the joints between the sashes and their pivoted bars, the latter being capable of being moved out of the path of the sashes and of automatically resuming their normal position, together with means which allow the top sash to swing freely round at the bottom of the window frame and below the other sash.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

14,919 of 1905.—W. LEAR and W. F. LEAR: *Method and Means for Securing Lines to Sliding Window Sashes.*

A method of securing cords, lines, or the like to sliding window sashes, characterised by front and back plates arranged at right angles to one another, a box connecting said plates together, and integral therewith, an opening at top and bottom of said box for the reception of the cord or line.

21,046 of 1904.—J. F. KLEINE: *Fireproof Floors and Ceilings.*

The construction of floors and ceilings, consisting of a concrete filling material in combination with an arrangement of the stones or bricks relative to the iron insertions, such that the same effect is produced as if the floor were constructed with small flat vaultings between the iron insertions.

27,943 of 1904.—E. HAMPTON: *Heating Churches, Chapels, and other Buildings.*

This consists in centrally heating churches, chapels, and other buildings, by means of steam-heated or hot-water heated pipes, having lateral extensions arranged under the seats.

29,101 of 1904.—H. V. SMITH & FREEMAN HINES, LTD.: *Apparatus for Trueing and Perfecting the Spigot and Socket Ends of Pipes.*

An apparatus for trueing and perfecting the spigot and socket ends of pipes, consisting of moulds having members adapted to be retracted to facilitate the withdrawal of the pipe from the mould.

2,899 of 1905.—A. AUSTIN: *Chain for Supporting Drain Pipes, and the like.*

A chain for supporting drain pipes and the like, being moulded in stoneware, cement, etc.; the shape of said chain being oblong and solid, in the form of brick, but with two upright supports, one at either end, leaving an open space in the centre at top, this open space being provided for the socket or flange of the pipe to drop in, and stand free of the slightest pressure.

10,533 of 1905.—H. H. LAKE (G. F. HALL): *Emergency Screens for Protection against Fire.*

A folding fire shutter having a box or case wherein it is normally enclosed by means of a plate or cover, which is secured to the underside of said box or case by a fusible fastening in such a manner that when exposed to sufficient heat said plate or cover is caused to release said shutter, and permit it to become extended under the influence of gravity over the part it is intended to protect.

11,192 of 1905.—A. C. CHENOWETH: *Construction of Concrete Columns, and the like.*

A column composed of concrete or cement, convoluted metal netting embedded therein, and plastic material moulded about said column.

11,208 of 1905.—H. STUTTLE and J. H. BEACH: *Pipe Couplings or Joints.*

A pipe coupling consisting of two counter part coupling members, each of which comprises a semi-circular extension formed integrally with and on the ends of a pipe section, inwardly extending flanges on said extension, and lugs whereby said coupling members are removably connected together, forming a semi-circular recess in the end of each section, which will permit any of said sections to be removed without disturbing the rest of the pipe.

14,108 of 1905.—P. NANGGUTH: *Laying Jointless Stone-wood Flooring.*

A method of laying a jointless flooring of stone-wood or similar material, distinguished by having an intermediate network of elastic composition, which forms open spaces between its ridges or walls, combined with isolating padding composed of sheets of roofing cardboard, which is placed in the open spaces surrounded by the network, and which thus form together a course or layer between the lower beton foundation and the stone-wood floor in order to prevent the upper floor from having contact with or becoming joined to the said foundation, said intermediate layer preventing cracks in the foundation from being transmitted to the said floor surface, said network thus forming a solid but elastic connexion between the stone-wood floor surface and the said foundation.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

November 15.—By HEPPER & SONS (at Leeds).

Leeds.—York-rd., a corner building site, area 335 yds., *f.*	£553
Pontefract-la., a building site, area 145 yds., *f.*	127
50, Pontefract-st., area 130 yds., *f.*, y.r. 13*l.*	170
Richmond-road, The Bank, Top Mills, area 1,659 yds., *f.*	1,600
Cross Stamford-st., The Providence Leather Works, area 636 yds., *f.*	825
Cryer's-yard, a building site, area 168 yds., *f.*	260
Beeston-rd., corner house and shop, area 92 yds., *f.*	355
Folly-rd., a building site, area 233 yds., *f.*	203
Canal-rd., a building site, area 1,338 yds., *f.*	836
Waterlow-rd., four sites and five cottages, area 391 yds., *f.*	901
4 and 6, Wales-st., and 14, 16, and 18, Bower-st., area 161 yds., *f.*	580
4, Hertford-st., and 3, Chapel-walk, area 134 yds., *f.*	335
Meadow-la., a freehold shop site, area 48 yds.	158

By WALTON & LEE (at Frome).
Chantry, Somerset.—The Chantry Estate, 97 a. 1 r. 28 p., f. £5,550
November 16.—By E. HOLSWORTH (at Bromley).
Bromley, Kent.—5 and 7, Bloomfield-rd., f., e.r. 84*l.* 1,230
November 17.—By MONTAGU & ROBINSON.
St. Luke's.—Nicoll's-buildings, f.g. rents 480*l.*, reversion in 51¼ yrs. 9,550
By F. HOUGHTON & DAVISON.
Walthamstow.—21, Avon-rd., f., p. 600
Southall, Middx.—13, Alexandra-av., f., w.r. 28*l.* 12s. 305
November 20.—By T. W. CARPENTER.
Pimlico.—Sutherland-pl., l.g.r. 27*l.*, u.t. 32½ yrs., g.r. 3*l.*, with reversion 500
Holloway.—Hilton-rd., l.g.r. 30*l.*, u.t. 46½ yrs., g.r. 10s. 575
By DRIVERS'
Holloway.—17 and 19, Cromwell-rd., u.t. 60 yrs., g.r. 20*l.*, w.r. 97 10s. 335
By HOLCOMBE, BETTS, & WEST.
South Kensington.—Finborough-rd., l.g. rents 110*l.*, u.t. 57½, g.r. 40*l.*, with reversion 1,690
Kensington.—36, Victoria-rd., u.t. 19½ yrs., g.r. 15*l.*, 15s., p. 1,425
Fulham.—61, Crab Tree-la., u.t. 91 yrs., g.r. 5*l.* 10s., w.r. 44*l.* 4s. 345
November 21.—By DAVID BURNETT & CO.
Tottenham.—320 and 322, High-rd., area 16,000 ft., f., y.r. 90*l.* 1,700
Minories.—40, Royal Mint-st., c., y.r. 25*l.* 435
By C. W. DAVIES & SON.
Islington.—31, Theberton-st., u.t. 22 yrs., g.r. 7*l.*, y.r. 44*l.* 235
92, Liverpool-rd., u.t. 12½ yrs., g.r. 9*l.*, e.r. 50*l.* 130
53, Norfolk-rd., u.t. 54 yrs., g.r. 5*l.*, y.r. 36*l.* 340
Holloway.—60, 62, 73, and 75, Goodinge-rd., u.t. 53 yrs., g.r. 28*l.*, e.r. 160*l.* 1,100
By DEBENHAM, TEWSON, & CO.
Hackney.—35 Well-st., f., y.r. 35*l.* 600
Leytonstone.—181, Hainault-rd., f., y.r. 40*l.* .. 600
Holloway.—St. John's-pk., "Park Lodge," u.t. 45½ yrs., g.r. 10*l.*, p. 350
By PEMBERTON & PAIBA.
Hampstead.—25, Kilburn Priory, u.t. 35 yrs., g.r., &c., 8*l.*, e.r. 60*l.* 400
By THURGOOD & MARTIN.
Kentish Town.—65, Malden-rd. (s.), u.t. 44 yrs., g.r. 8*l.*, y.r. 50*l.* 530
Abbey Wood, Kent.—Woolwich-rd., "The Cot" and half an acre, f., y.r. 40*l.* 600
By MULLETT BOOKER, & CO.
Hyde Park.—23, Norfolk-sq., u.t. 52½ yrs., g.r. 35*l.*, p. 1,000
21, Sussex-sq., and 57, Bathurst-mews, u.t. 31½ yrs., g.r. 49*l.*, p. 2,380
Devonport-st., l.g.r. 20*l.*, u.t. 29½ yrs., g.r. nil. 295
1, Radnor-pl., u.t. 26½ yrs., g.r. 9*l.*, y.r. 110*l.* 1,000
Southwick-cres., l.g.r. 30*l.*, u.t. 30 yrs., g.r. nil. 455
Radnor-pl., l.g.r. 22*l.* 10s., u.t. 30 yrs., g.r. 2*l.* 300
17B, Radnor-pl., u.t. 30 yrs., g.r. 4*l.*, y.r. 104*l.* 900
17A, Radnor-pl., u.t. 30 yrs., g.r. 2*l.*, y.r. 65*l.* 600
Sussex-gdns., l.g.r. 15*l.*, u.t. 31½ yrs. g.r. nil. 220
5, Sussex-gdns., u.t. 29 yrs., g.r. 15*l.*, y.r. 100*l.* 960
Regent's Park.—74, Osnaburgh-st. (business premises), y.r. 100*l.*; also l.g.r. 10*l.*, u.t. 17½ yrs., g.r. 16*l.* 710
82, William-st. (s.), y.r. 55*l.*; also l.g.r. 18*l.*, u.t. 17½ yrs., g.r. 11*l.* 400
By J. C. PLATT (at Hammersmith).
Chiswick.—23 to 33 (odd), Devonshire-rd., u.t. 62½ yrs., g.r. 25*l.* 4s., w.r. 215*l.* 16s. 1,700
Kensington.—66, Masbro-rd., f., w.r. 74*l.* 2s. .. 645
By LOUND & DONET (at Masons' Hall Tavern).
Hampton, Middlesex.—High-st., "Red Lion Hotel," f., p. (with goodwill). 3,000
High-st., a freehold shop, y.r. 24*l.* 260
Twickenham, Middx.—The "Albany Hotel," u.t. 71 yrs., y.r. 125*l.* (with goodwill) 6,830
King-st., The "George" p-h., u.t. 5½ yrs., y.r. 65*l.* (with goodwill) 3,000
Willesden.—Acton-la., The "Grand Junction Arms" p-h., u.t. 7½ yrs., y.r. 500*l.* 3,050
By ORGILL, MARKS & CO. (at Masons' Hall Tavern).
Enfield.—Theobald's Park-rd., The "Plough" b-h., f., p. (with goodwill) 1,900
By E. C. STRETCH (at Rufford).
Rufford, Lancs.—Two houses and 6 a. 1 r. 38 p., f. 790
"Boundary House Farm," 43 a. 3 r. 31 p., f. .. 2,657
Holmes Wood-la., two farms, 47 a. 1 r. 22 p., f. 4,430
Six moss fields, 45 a. 0 r. 29 p., f. 2,700
Two houses and 5 a. 1 r. 36 p., f. 700
Wheelwright's shop, smithy, etc., 1 a. 0 r. 6 p., f. 750
Six freehold fields, 31 a. 1 r. 26 p. 2,144
Fifteen freehold cottages and 9 a. 2 r. 10 p. .. 2,621
House, shop and 1 a. 0 r. 26 p., f. 300
November 22.—ARTHUR BARTON
Camberwell.—17, New Church-rd. (s), f., w.r. 33*l.* 16s. 355
19, New Church-rd. (s), f., w.r. 34*l.* 4s. 8d. .. 235
Plumstead, Kent.—55, Robert-st. (s.), u.t. 46 yrs., g.r. 4*l.* 5s., w.r. 28*l.* 12s. 125
By S. B. CLARK & SON.
Eltham, Kent.—"Darenthdale" and 10 a. 3 r. 34 p., f., p. 3,050
By HUMBERT & FLINT.
Holborn.—33, 34, and 35, Kirkby-st. (manufacturing premises), area 4,560 ft., f., p. .. 5,800
By F. JOLLY & JAMES.
Forest Gate.—132, Field-rd., f., e.r. 32*l.* 10s. .. 320
By ALFRED RICHARDS.
Bloomsbury.—21A, Devonshire-st. (s.), f., w.r. 119*l.* 12s. 1,000
Holborn.—10, Emerald-st. (warehouse), area 750 ft., u.t. 29 yrs., g.r. 25*l.*, y.r. 125*l.* 800
5, Orde Hall-st., u.t. 70½ yrs., g.r. 33*l.*, w.r. 192*l.* 18s. 680
10A, Featherstone-buildings (s.), area 1,225 ft., g.r. 70*l.*, y.r. 312*l.* 4s. 1,150
Clerkenwell.—160, Farringdon-rd. (s.), u.t. 48¼ yrs., g.r. 9*l.*, w.r. 107*l.* 18s. 400

By RUSHWORTH & STEVENS.
Kensington.—38, Russell-rd., f., p. £800
Plumstead, Kent.—41, Reidhaven-rd., u.t. 61½ yrs., g.r. 3*l.*, w.r. 23*l.* 8s. 180
By SCORELL & LAKE.
Kentish Town.—Wellesley-rd., f.g. rents 72*l.*, reversion in 40 and 61 yrs. 1,885
By WHEELER BROS.
Pimlico.—8 to 11, Wilton-rd. (s.), u.t. 18½ yrs., g.r. 35*l.*, y.r. 135*l.* 1,075
November 23.—By CANE & CO.
Dulwich.—32, Gowlett-rd., u.t 63 yrs., g.r. 7*l.*, e.r. 34*l.* 305
Brockley.—365, Brockley-rd. (s.), u.t. 86 yrs., g.r. 7*l.* 7s., y.r. 60*l.* 700
By MAY & PHILPOT.
Brixton.—21 to 31 (odd), Elm-pk., u.t. 45½ yrs., g.r. 33*l.*, w.r. 241*l.* 16s. 1,350
By FAREBROTHER, ELLIS, & CO.
Tackley, Oxon.—"Court Farm," 227 a. 2 r. 20 p., f. 4,750
The "Gardiners' Arms" p-h., 3 cottages and 2 a. 1 r. 2 p., f. 1,100
Thirteen freehold cottages and 1 a. 1 r. 8 p., f. 830
By FRITH, GARLAND, & CO.
Harringay.—103, 105, and 107, Seymour-rd., u.t 90 yrs., g.r. 21*l.*, e.r. 108*l.* 1,095
97 to 103 (odd), Hewitt-rd., u.t. 92 yrs., g.r. 28*l.*, y.r. 144*l.* 1,300
18, Chesterfield-gins., u.t. 84 yrs., g.r. 6*l.* 6s., e.r. 32*l.* 290
By HARRIE STACEY.
Redhill, Surrey.—Lingfield-la., l.g. rents 84*l.*, u.t. 29½ yrs., g.r. 24*l.* 10s. 6d. 840
By STIMSON & SONS.
Stoke Newington.—Springdale-rd., f.g.r. 22*l.* 10s., reversion in 65 yrs. 380
Clapham.—1 to 19 (odd), Lirom-rd., u.t. 61 yrs., g.r. 55*l.*, y.r. 312*l.* 3,015
Camberwell.—20, 21, 23, 25, 26, and 32, Northway-rd., u.t. 67½ yrs., g.r. 25*l.*, y.r. 214*l.* 14s. 1,555
Peckham.—2, Brayards-rd., u.t. 65 yrs., g.r. 5*l.*, w.r. 50*l.* 4s. 355
133 and 135, Peckham Park-rd., u.t. 153 yrs., g.r. 8*l.*, w.r. 70*l.* 4s. 610
Battersea.—Stewart's-la. West l.g.r. 54*l.*, u.t. 14 yrs., g.r. 12*l.* 270
11 to 19 (odd), York-rd. (s.), u.t. 31 yrs., g.r. 25*l.* 12s. 6d., y.r. 182*l.* 0s. 10d. 1,465
39, York-rd. (s.) u.t. 64½ yrs., g.r. 3*l.*, y.r. 31*l.* 19s. 11d. 365
8 to 16 (even), Tritton-st., u.t. 60½ yrs., g.r. 21*l.*, w.r. 111*l.* 16s. 445
80, Ingrave-st., u.t. 60 yrs., g.r. 5*l.*, w.r. 27*l.* 6s. 165
Bethnal Green.—155, 171, and 173, Cambridge-rd. (s.), f., y.r. 108*l.* 1,450
Highbury.—186, Blackstock-rd., u.t. 65 yrs., g.r. 10*l.*, y.r. 50*l.* 360
Battersea.—27, York-rd., "The Jolly Gardeners" b.h., an improved rental of 49*l.* 9s. 11d. for 31 yrs. 615
Walworth.—62 and 64, East-st. (s.) f., y.r. 74*l.* 905
Tottenham.—218 and 220, Northumberland-pk., f., y.r. 54*l.* 590
By NEWBON, EDWARDS, & SHEPHARD.
Battersea.—Queen's-rd., f.g. rents 34*l.* 10s., reversion in 67 yrs. 870
Stanley-st., f.g.r. 20*l.*, reversion in 59½ yrs. .. 725
Beresford-st., f.g. rents 56*l.* 6s., reversion in 64½ to 76½ yrs. 1,430
Old Kent-road.—Hemp-row, f.g.r. 20*l.*, reversion in 66½ yrs. 470
Camberwell.—Brisbane-st., f.g.r. 25*l.*, reversion in 91½ yrs. 525
Catford.—Woolstone-rd., f.g. rents 26*l.*, reversion in 90½ yrs. 665
Rotherhithe.—Cornbury-rd., f.g.r. 36*l.* 10s., reversion in 77 yrs. 730
Leyton.—Manby-rd., f.g. rents 32*l.* 15s., reversion in 73 yrs. 750
Leytonstone.—Cobbold-rd., f.g.r. 21*l.*, reversion in 75½ yrs. 475
Plaistow.—Terrace-rd., f.g.r. 30*l.*, reversion in 80½ yrs. 690
Tottenham.—Seaford rd., f.g.r. 51*l.* 4s., reversion in 76½ yrs. 1,175
Poplar.—Bath-st., f.g.r. 20*l.*, reversion in 56½ yrs. 405
Camberwell.—121 Denmark-hill (s.), u.t. 60 yrs., g.r. 10*l.* 10s., y.r. 55*l.* 515
Barnsbury.—133, Henningford-rd., u.t. 37 yrs., g.r. 7*l.*, e.r. 45*l.* 380
Dalston.—4 to 14 (even), Shrubland-gr., u.t. 14 yrs., g.r. 24*l.*, y.r. 194*l.* 910
8 and 9, West Side, f., y.r. 64*l.* 1,010
November 24.—By MARK HUBBARD.
Gunnersbury.—19 to 25 (odd), Cambridge-rd., u.t. 55 yrs., g.r. 8*l.*, y.r. 140*l.* 1,205
Islington.—40, 42, and 44, Dorinda-st., f., w.r. 73*l.* 9s. 580
By PROTHEROE & MORRIS.
Woodford.—1, Myrtle-villas, f., y.r. 26*l.* 345
Binstead, Hants.—Reliance Nursery (otherwise Jude Farm), 21½ acres, f., p. 935

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; g.r. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

MEETINGS.

FRIDAY, DECEMBER 1.

Architectural Association.—Mr. E. F. Reynolds on "Turkish Architecture," illustrated with lantern views. 7.30 p.m.

Institution of Civil Engineers (Students' Meeting).—Mr. W. L. Jenkins on "An Installation for the Bacterial Treatment of Sewage at Neath." 8 p.m.

SATURDAY, DECEMBER 2.

The Incorporated British Institute of Certified Carpenters.—Annual general meeting, Carpenters' Hall, London Wall, E.C. 6.15 p.m.

MONDAY, DECEMBER 4.

Royal Institute of British Architects.—Business and ordinary meeting (1) to announce the result of the November examinations; (2) to elect candidates for membership; (3) Mr. H. T. Bonner to move "that neither the President nor the Council, nor either of them, shall approach the promoters of any competition with the object of their nominating competitors; nor shall the President or Council appoint any professional Assessor in any competition, unless requested to do so by the promoters of such competition"; (4) Mr. W. Woodward to open an informal discussion on "The Fire Clauses of the London Building Act." 8 p.m.

Society of Arts (Cantor Lecture).—Dr. J. A. Fleming, F.R.S., on "The Measurement of High Frequency Currents and Electric Waves."—II. 8 p.m.

Liverpool Architectural Society.—Mr. E. A. Rickards on "Intention in Ornament." Illustrated by lantern slides. 6 p.m.

Society of Engineers.—Mr. Benjamin L. Bradley on "The Grindleford Stone Quarries and their Working." 7.30 p.m.

TUESDAY, DECEMBER 5.

Institution of Civil Engineers.—Hon. Charles Algernon Parsons, C.B., LL.D., F.R.S., and Mr. G. G. Stoney, MM.Inst.C.E., on "The Steam-Turbine." 8 p.m.

WEDNESDAY, DECEMBER 6.

Edinburgh Architectural Association.—Mr. E. Macrae on "A Tour in Belgium," illustrated by lantern slides. 8 p.m.

Builders' Foremen and Clerks of Works' Institution.—Ordinary meeting of the members. 8 p.m.

The Quantity Surveyors' Association.—An ordinary general meeting, to be held in "The Commodore's Room," Holborn Restaurant. Paper by Mr. F. R. Hollis, entitled "Some Thoughts on the Quantity Surveyor, and his Relation to the Building Owner, the Architect, and the Builder." 7 p.m.

Institution of Civil Engineers.—Students' visit to the Erith Slipway of Messrs. William Cory & Son, Ltd.

Royal Archæological Institute.—Mr. William Churchill on "The Nurhags of Sardinia, and some other Megalithic Monuments of the Mediterranean Region." 4 p.m.

THURSDAY, DECEMBER 7.

Civil and Mechanical Engineers' Society (Caxton Hall).—Dr. J. S. Owens, B.A., on "Concrete Mixers." 8 p.m.

Institution of Electrical Engineers.—Mr. W. H. Patchell on "The Charing Cross Company's City of London Works." 8 p.m.

FRIDAY, DECEMBER 8.

Junior Institution of Engineers.—Professor J. T. Morris on "Electric Mains for Power Transmission Work." 8 p.m.

TERMS OF SUBSCRIPTION.

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PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

	£	s.	d.			
BRICKS, &c.						
Hard Stocks	1	7	0	per 1000 alongside, in river.		
Rough Stocks and Grizzles	1	4	0	,,	,,	,,
Facing Stocks	2	0	0	,,	,,	,,
Shippers	2	0	0	,,	,,	,,
Flettons	1	5	6	,,	at railway depôt.	
Red Wire Cuts	1	11	0	,,	,,	,,
Best Fareham Red	3	12	0	,,	,,	,,
Best Red Pressed Ruabon Facing	5	0	0	,,	,,	,,
Best Blue Pressed Staffordshire	4	1	0	,,	,,	,,
Do. Bullnose	4	6	6	,,	,,	,,
Best Stourbridge Fire Bricks	3	15	6	,,	,,	,,
GLAZED BRICKS.						
Best White and Ivory Glazed Stretchers	12	0	0	,,	,,	,,
Headers	11	0	0	,,	,,	,,
Quoins, Bullnose, and Flats	16	0	0	,,	,,	,,
Double Stretchers	19	0	0	,,	,,	,,
Double Headers	16	0	0	,,	,,	,,
One Side and two Ends	19	0	0	,,	,,	,,
Two Sides and one End	20	0	0	,,	,,	,,
Splays, Chamferred, Squints	20	0	0	,,	,,	,,
Best Dipped Salt Glazed Stretchers, and Header	12	0	0	,,	,,	,,
Quoins, Bullnose, and Flats	14	0	0	,,	,,	,,
Double Stretchers	15	0	0	,,	,,	,,
Double Headers	14	0	0	,,	,,	,,
One Side and two Ends	15	0	0	,,	,,	,,
Two Sides and one End	15	0	0	,,	,,	,,
Splays, Chamferred, Squints	14	0	0	,,	,,	,,
Second Quality White and Dipped Salt Glazed	2	0	0	,,	less than best.	

BRICKS, &c. (*continued*).

	s.	d.	
Thames and Pit Sand	6	9	per yard, delivered.
Thames Ballast	5	3	„ „
Best Portland Cement	23	0	per ton, „
Best Ground Blue Lias Lime	19	0	„ „

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s.	d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1	6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1	8¼	„ „
PORTLAND STONE (20 ft. average)—Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	1	„ „
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	2½	„ „

	s.	d.	
Ancaster in blocks	1	10	per ft. cube, deld. rly. depôt.
Beer „	1	6	„ „
Greenshill „	1	10	„ „
Darley Dale in blocks	2	4	„ „
Red Corsehill „	2	2	„ „
Closeburn Red Freestone	2	0	„ „
Red Mansfield „	2	4	„ „
YORK STONE—*Robin Hood Quality.* Scappled random blocks.	2	10	„ „
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3	per ft. super., „
6 in. rubbed two sides ditto, ditto	2	6	„ „
3 in. sawn two sides slabs (random sizes)	0	11½	„ „
2 in. to 2½ in. sawn one side slabs (random sizes)	0	7½	„ „
1½ in. to 2 in. ditto, ditto	0	6	„ „
HARD YORK— Scappled random blocks.	3	0	per ft. cube, „
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	8	per ft. super., „
6 in. rubbed two sides ditto	3	0	„ „
3 in. sawn two sides slabs (random sizes)	1	2	„ „
2 in. self-faced random flags	0	5	„ „

	s.	d.	
Hopton Wood (Hard Bed) in blocks	2	0	per ft. cube, deld. rly. depôt.
„ „ „ 6 in. sawn both sides landings	2	7	per ft. super. deld. rly. depôt.
„ „ „ 3 in. sawn both sides random slabs	1	0	„ „
„ „ „ 2 in. do.	0	8½	„ „

SLATES.

In. In.	£	s.	d.	
20×10 best blue Bangor	13	2	6	per 1000 of 1200 at r. d.
20×12 „ „	13	17	6	„ „
20×10 first quality „	13	0	0	„ „
20×12 „ „	13	15	0	„ „
16×8 „ „	7	5	0	„ „
20×10 best blue Portmadoc	12	12	6	„ „
16×8 „ „	6	12	6	„ „
20×10 best Eureka unfading green	15	17	6	„ „
20×12 „ „	18	7	6	„ „
18×10 „ „	13	5	0	„ „
16×8 „ „	10	5	0	„ „
20×10 permanent green	11	12	6	„ „
18×10 „ „	9	12	6	„ „
16×8 „ „	6	12	6	„ „

TILES.

	s.	d.	
Best plain red roofing tiles	42	0	per 1000 at rly. depôt.
Hip and Valley tiles	3	7	per doz. „
Best Broseley tiles	50	0	per 1000 „
Do. Ornamental tiles	52	6	„ „
Hip and Valley tiles	4	0	per doz. „
Best Ruabon red, brown, or brindled do. (Edwards)	57	6	per 1000 „
Do. Ornamental do.	60	0	„ „
Hip tiles	4	0	per doz. „
Valley tiles	3	0	„ „
Best Red or Mottled Staffordshire do. (Penkes)	51	9	per 1000 „
Do. Ornamental do.	54	6	„ „
Hip tiles	4	1	per doz. „
Valley tiles	3	8	„ „
Best "Rosemary" brand plain tiles	48	0	per 1000 „
Best Ornamental tiles	50	0	„ „
Hip tiles	4	0	per doz. „
Valley tiles	3	8	„ „
Best "Hartshill" brand plain tiles, sand-faced	50	0	per 1000 „
Do. pressed	47	6	„ „
Do. Ornamental do.	50	0	„ „
Hip tiles	4	0	per doz. „
Valley tiles	3	6	„ „

WOOD.

BUILDING WOOD.	At per standard. £	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	13	10	0	15	0	0
Deals: best 3 by 9	13	0	0	14	0	0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11	0	0	12	0	
Battens: best 2½ by 6 and 3 by 6	0	10		less than 7 in. and 8 in.		
Deals: seconds	1	0	0	less than best.		
Battens: seconds	0	10	0	„	„	
2 in. by 4 in. and 2 in. by 6 in.	9	0	0	10	0	0
2 in. by 4½ in. and 2 in. by 5 in.	8	10	0	9	10	0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0	10	0	more than battens.		
¾ in.	1	0	0	„		

WOOD (*continued*).

BUILDING WOOD (*continued*).	At per load of 50 ft. £	s.	d.	£	s.	d.
Fir timber: best middling Danzig or Memel (average specification)	4	10	0	5	0	0
Seconds	4	0	0	4	10	0
Small timber (8 in. to 10 in.)	3	12	6	3	15	0
Small timber (6 in. to 8 in.)	3	0	0	3	10	0
Swedish balks	2	10	0	3	0	0
Pitch-pine timber (30 ft. average)	3	5	0	3	15	0
JOINERS' WOOD.	At per standard.					
White Sea: first yellow deals, 3 in. by 11 in.	24	0	0	25	0	0
3 in. by 9 in.	22	0	0	23	0	0
Battens, 2½ in. and 3 in. by 7 in.	16	10	0	18	0	0
Second yellow deals, 3 in. by 11 in.	18	10	0	20	0	0
„ „ 3 in. by 9 in.	17	10	0	19	0	0
Battens, 2½ in. and 3 in. by 7 in.	13	10	0	14	10	0
Third yellow deals, 3 in. by 11 in. and 9 in.	13	10	0	15	0	0
Battens, 2½ in. and 3 in. by 7 in.	11	0	0	12	0	0
Petersburg: first yellow deals, 3 in. by 1 in.	21	0	0	22	10	0
Do. 3 in. by 9 in.	18	0	0	19	10	0
Battens	13	10	0	15	0	0
Second yellow deals, 3in. by 11in.	16	0	0	17	0	0
Do. 3 in. by 9 in.	14	10	0	16	0	0
Battens	11	0	0	12	10	0
Third yellow deals, 3 in. by 11 in.	13	0	0	14	0	0
Do. 3 in. by 9 in.	12	10	0	14	0	0
Battens	10	0	0	11	0	0
White Sea and Petersburg— First white deals, 3 in. by 11 in.	14	10	0	15	10	0
„ „ 3 in. by 9 in.	13	10	0	14	10	0
Battens	11	0	0	12	0	0
Second white deals, 3 in. by 11 in.	13	10	0	14	10	0
„ „ 3 in. by 9 in.	12	10	0	13	10	0
„ „ battens	10	0	0	11	0	0
Pitch-pine: deals	16	10	0	20	0	0
Under 2 in. thick extra	0	10	0	1	0	0
Yellow Pine—First, regular sizes	44	0	0	upwards.		
Oddments	32	0	0	„		
Seconds, regular sizes	33	0	0	„		
Yellow Pine oddments	28	0	0	„		
Kauri Pine—Planks, per ft. cube	0	3	6	0	5	0
Danzig and Stettin Oak Logs— Large, per ft. cube	0	3	0	0	3	6
Small „ „	0	2	6	0	2	9
Wainscot Oak Logs, per ft. cube	0	5	0	0	5	6
Dry Wainscot Oak, per ft. sup. as inch	0	0	8	0	0	9
¾ in. do. do.	0	0	7	—		
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch	0	0	9	0	1	0
Selected, Figury, per ft. super. as inch	0	1	6	0	2	6
Dry Walnut, American, per ft. super. as inch	0	0	10	0	1	0
Teak, per load	17	0	0	22	0	0
American Whitewood Planks, per ft. cube	0	4	0	0	5	0
Prepared Flooring, etc.—	Per square.					
1 in. by 7 in. yellow, planed and shot	0	13	6	0	17	6
1 in. by 7 in. yellow, planed and matched	0	14	0	0	18	0
1¼ in. by 7 in. yellow, planed and matched	0	16	0	1	0	0
1 in. by 7 in. white, planed and shot	0	12	0	0	14	6
1 in. by 7 in. white, planed and matched	0	12	6	0	15	0
1¼ in. by 7 in. white, planed and matched	0	15	0	0	16	6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0	11	0	0	13	6
1 in. by 7 in. „ „	0	14	0	0	18	0
¾ in. by 7 in. white „ „	0	10	0	0	11	6
1 in. by 7 in. „ „	0	12	9	0	15	0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £	s.	d.	£	s.	d.
Rolled Steel Joists, ordinary sections	6	5	0	7	0	0
Compound Girders, ordinary sections	7	15	0	8	15	0
Steel Compound Stanchions	9	7	6	10	17	6
Angles, Tees, and Channels, ordinary sections	7	15	0	8	15	0
Flitch Plates	8	0	0	8	10	0
Cast Iron Columns and Stanchions including ordinary patterns	6	17	6	8	0	0

METALS.

	Per ton, in London. £	s.	d.	£	s.	d.
IRON— Common Bars	8	0	0	8	10	0
Staffordshire Crown Bars, good merchant quality	8	10	0	9	0	0
Staffordshire "Marked Bars"	10	0	0	—		
Mild Steel Bars	8	15	0	9	0	0
Hoop Iron, basis price	9	5	0	9	10	0
„ „ Galvanised	17	0	0	—		
(*And upwards, according to size and gauge.)						
Sheet Iron Black— Ordinary sizes to 20 g.	9	10	0	—		
„ „ 24 g.	10	10	0	—		
„ „ 26 g.	12	0	0	—		
Sheet Iron, Galvanised, flat, ordinary quality— Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	14	0	0	—		
Ordinary sizes to 22 g. and 24 g.	14	10	0	—		
„ „ 26 g.	15	0	0	—		
Sheet Iron, Galvanised, flat, best quality— Ordinary sizes to 20 g.	17	0	0	—		
„ „ 22 g. and 24 g.	17	10	0	—		
„ „ 26 g.	19	0	0	—		
Galvanised Corrugated Sheets— Ordinary sizes 6 ft. to 8 ft. 20 g.	13	10	0	—		
„ „ 22 g. and 24 g.	14	0	0	—		
„ „ 26 g.	15	5	0	—		
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11	10	0	—		
Best Soft Steel Sheets, 22 g. & 24 g.	12	10	0	—		
„ „ 26 g.	14	15	0	—		
Cut Nails, 3 in. to 6 in.	9	10	0	9	15	0
(Under 3 in., usual trade extras.)						

LEAD, &c.

	Per ton, in London. £	s.	d.	£	s.	d.
LEAD—Sheet, English, 3lb. and up.	18	5	0	—		
Pipe in coils	18	15	0	—		
Soil pipe	21	5	0	—		
Compo pipe	21	5	0	—		
ZINC—Sheet Vieille Montagne ton	33	0	0	—		
Silesian	32	15	0	—		
COPPER— Strong Sheet per lb.	0	1	0	—		
Thin „ „	0	1	1	—		
Copper nails „ „	0	0	11	—		
BRASS— Strong Sheet „	0	0	11	—		
Thin „ „	0	1	0	—		
TIN—English Ingots „	0	1	5½	—		
SOLDER—Plumbers' „	0	0	7	—		
Tinmen's „	0	0	9	—		
Blowpipe „	0	0	10	—		

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2¾d.	per ft.	delivered.
„ fourths	2d.	„	„
21 oz. thirds	3¾d.	„	„
„ fourths	3d.	„	„
26 oz. thirds	4¾d.	„	„
„ fourths	3¾d.	„	„
32 oz. thirds	5¾d.	„	„
„ fourths	5d.	„	„
Fluted Sheet, 15 oz.	3¾d.	„	„
„ 21 oz.	4¾d.	„	„
⅛ Hartley's Rolled Plate	2d.	„	„
3/16 „ „ „	2¾d.	„	„
¼ „ „ „	2¾d.	„	„

OILS, &c.

		£	s.	d.
Raw Linseed Oil in pipes	per gallon	0	1	7
„ „ „ in barrels	„	0	1	8
„ „ „ in drums	„	0	1	10
Boiled „ „ in pipes	„	0	1	9
„ „ „ in barrels	„	0	1	10
„ „ „ in drums	„	0	2	0
Turpentine in barrels	„	0	3	9
„ in drums	„	0	3	11
Genuine Ground English White Lead	per ton	21	10	0
Red Lead, Dry	„	20	10	0
Best Linseed Oil Putty	per cwt.	0	6	6
Stockholm Tar	per barrel	1	12	0

VARNISHES, &c.

	Per gallon. £	s.	d.
Fine Pale Oak Varnish	0	8	0
Pale Copal Oak	0	10	6
Superfine Pale Elastic Oak	0	12	6
Fine Extra Hard Church Oak	0	10	0
Superfine Hard-drying Oak, for seats of Churches	0	14	0
Fine Elastic Carriage	0	12	6
Superfine Pale Elastic Carriage	0	16	0
Fine Pale Maple	0	16	0
Finest Pale Durable Copal	0	18	0
Extra Pale French Oil	1	1	0
Eggshell Flatting Varnish	0	18	0
White Copal Enamel	1	4	0
Extra Pale Paper	0	12	0
Best Japan Gold Size	0	10	6
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	6
Berlin Black	0	16	0
Knotting	0	10	0
French and Brush Polish	0	10	0

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance. The Editor cannot undertake to read and consider articles offered for acceptance unless they are type-written.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and not to the Editor.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ABERDEEN.—For 2,420 lineal yds. of brick and concrete oval sewers, for the Town Council. Mr. W. Dyack, Engineer, 41½, Union-street, Aberdeen:—
P. Tawse, Torry, Aberdeen* £28,885 10

TENDERS.—*Continued on page* 601.

CONTRACTS AND PUBLIC APPOINTMENT.

(For some Contracts, etc., still open, but not included in this List, see previous issues.)

CONTRACTS.

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, etc., supplied by	Tenders to be delivered
Pipe Sewer (1,063 yds. of 12 in. and 507 yds. of 9 in.)	Milton-next-Sittingbourne U.D.C. ..	Town Hall, High-street, Milton	Dec. 5
Pipes (470 tons of cast-iron)	Edinburgh and District Water Trust	Superintendent of Works' Office, 12, St. Giles-street, Edinburgh ..	do.
Road Works, Broughton and Pendleton	Salford Corporation	Borough Engineer's Office, Town Hall, Salford	do.
Walls (raising boundary), etc., Blaydon School	Durham County Education Authority	W. Rushworth, F.R.I.B.A., Education Offices, Durham	do.
Tramway, Cnvrtn. (Single to Dble. Line), Lon.-rd. Rootle House, etc., Alterations, West Gate, Mansfield	Derby Corporation	G. Trevelyan Lee, Town Clerk, 15, Tenant-street, Derby	do.
		G. F. A. Griffin, Architect, Watson-avenue, Mansfield	do.
*SLUICE GATES (73)	Willesden District Council	Council's Engineer, Public Offices, Dyne-road, Kilburn, N.W.	do.
Road and Drains, Cleveland-road, Cowley	Uxbridge R.D.C.	E. Birks, Engineer & Surveyor, Town Hall, Uxbridge	Dec. 6
Road Works, Greenhead-lane	Wortley R.D.C.	G. E. Beaumont, Surveyor, Grenoside, Yorkshire	do.
Plant (high Tension)	Warrington Electricity Committee..	F. V. L. Mathias, Boro' Electrical Engineer, Howley, Warrington	do.
Paint., etc., Two Blocks of Wkhse. Bldgs., Knutsford	Bucklow Guardians	R. J. M'Beath, Architect, Birnam House, Sale	do.
Urinals (five)	Manchester Corporation	City Surveyor's Office, Town Hall, Manchester	do.
Machine (washing) for Crumpsall Workhouse	Manchester Guardians	Master of the Workhouse	do.
Road Improvement (Headon), Whitchurch	Glamorgan County Council	T. M. Franklen, Clerk, Westgate-street, Cardiff	do.
Llandaff and Whitchurch Main Road, Llandaff Yard	do.	do.	do.
Diverting Road near Nash Cross	do.	do.	do.
Widening Road at Ystradomen	do.	do.	do.
5450 lineal yds. of 9-in. Stoneware Pipe Sewer, Cefn ..	Wrexham R.D.C.	J. Price Evans, C.E., Argyle-chambers, Wrexham	do.
Stores and Materials	Nottingham Works & Ways Com..	A. Brown, City Engineer, Nottingham	Dec. 7
Street Works	Southend-on-Sea Corporation	E. J. Elford, Borough Surveyor, Town Hall, Southend-on-Sea	do.
Paving and Flagging Streets	Leeds Corporation	City Engineer's Office, Municipal Buildings, Leeds	do.
Plumbers' and Glaziers' Work	Sheffield Education Committee	J. F. Moss, Secretary, Leopold-street, Sheffield	do.
Repairing part of Hannah-street, Porth	Rhondda U.D.C.	W. J. Jones, Public Offices, Pentre, Rhondda	do.
Enlarging, etc., Congregational Manse, Sedbergh		S. Shaw, Architect, Kendal	do.
Four Blocks of Buildings, Hawkhead Asylum	Govan District Lunacy Board	H & D. Barclay Architects, 245, St. Vincent-street, Glasgow	Dec. 8
Refuse Removal	St. Marylebone Borough Council ..	J. Wilson, Town Clerk, Town Hall Marylebone-ln., Oxford-st., W.	do.
*NEW SORTING OFFICE, PECKHAM	H.M. Office of Works	H.M. Office of Works, Storey's Gate, Westminster, S.W.	do.
Church Renovation, Broad-lane, Illogan, Cornwall ..	Primitive Methodists	Sampson Hill, Architect, Green-lane, Redruth	do.
Street Works, Eskdale-road	Chesham U.D.C.	J. G. How, Clerk, High-street, Chesham	Dec. 9
Deepening the River Thames, Gravesend	Thames Conservancy	R. Philipson, Sec., Thames Conserv. Offices, Victoria Embankment	do.
Stone for Roads	Northumberland County Council ..	County Surveyor, Moot Hall, Newcastle-on-Tyne	do.
*Sewer Extension (250 yds. of 9-in. Stoneware Pipe)..	Dorking U.D.C.	G. Somers Matthew, Surveyor, 46, Lough-street, Dorking	do.
Two Villas at Watering		A. R. Bennetts, Watering, St. Austell, Cornwall	do.
*Alters. to Premises in High-street, Weston-super-Mare	Messrs. George	Hans Price & W. Jane, Architects, Weston-super-Mare	do.
Formation of a Bowling Green		W. Tweedie, Secretary, Moss-mark, New Cumnock N.B.	Dec. 11
Culverting Haycroft Stream (275 yds.)	Grimsby Corporation	H. Gilbert Whyatt, Borough Engineer, Town Hall-square, Grimsby	do.
Pipes (415 tons of Cast-Iron)	Halifax Corporation	G. H. Hill & Sons, Engineers, 3, Victoria-street, Westminster, S.W.	do.
1,000 Steel Tyres for Carriages, etc.	Southern Mahratta Ry. Co.	E. Z. Thornton, 44, Queen Anne's-gate, S.W.	do.
Street Making	Crewe Town Council	G. Eaton-Shore, Borough Surveyor, Municipal Offices, Crewe	do.
Stores	Leicester Corporation	E. G. Mawbey, Borough Engineer, Town Hall, Leicester	do.
Granite	do.	do.	do.
Cast-Iron Water Main (540 yds. of 4-in.)	Hertford Corporation	Borough Surveyor's Office, Hertford	do.
House, Queen's Bridge, Belfast	Great Northern Railway Co., Ireland	W. H. Mills, Engineer, Amiens-street Terminus, Dublin	do.
Residence (Detached), Dundalk	do.	do.	do.
School, Hillary-street, Walsall	Walsall Education Committee	Bailey & McConnal, Architects, Bridge-street, Walsall	do.
Stores	Powell Duffryn Steam Coal Co.	Stores Manager, Aberaman Offices, near Aberdare	do.
Elec. Lighting, Fire Brigade Station, Gt. Brunswick-st.	Dublin Waterworks Committee	City Architect, Municipal Buildings, Cork Hill, Dublin	do.
Street Works, Shirley and Portswood	Southampton Corporation	J. A. Crowther, Borough Engineer, Municipal Offices, Southampton	do.
Reservoir, Tanks, etc., near Carlingford	Dundalk R.D.C.	P. R. Finnigan, Clerk, Council Office, Dundalk	do.
*IRON ROOFING	St. Pancras Borough Council	Borough Engineer, Town Hall, St. Pancras, N.W.	Dec. 12
Fire Hydrants, etc. (50)	Southall-Norwood U.D.C.	R. Brown, Engineer and Surveyor, Public Offices, Southall	do.
Stores (General)	South Indian Railway Co., Ltd.	H. W. Notman, 55, Gracechurch-street, London, E.C.	do.
Locomotive Stores	do.	do.	do.
Ironwire Fencing (40 tons)	do.	do.	do.
Roofing (5 roofs, 100 ft. by 25 ft.)	do.	do.	do.
School for 300 Children, Barnton	Sub-Com. for Northwich District ..	H. Beswick, County Architect, Newgate-street, Chester	do.
Paving Carriageways of Union-row, Minories	Corporation of London	Office of Engineer, Corporation, Guildhall, London	do.
Street Works, Annfield Plain, Durham	The U.D.C.	T. J. Trowsdale, Surveyor, Council Offices, Annfield Plain	do.
*SLOP VANS AND WATER VANS	Willesden District Council	Council's Engineer, Public Offices, Dyne-road, Kilburn, N.W.	do.
Drain Pipes, Cement, Bricks, etc.	Macclesfield Corporation	C. W. Stubbs, Borough Engineer, Macclesfield	Dec. 13
*HARDWOOD OR IRON FENCING	Essex Education Committee	F. Whitmore, County Architect, 73 Duke-street, Chelmsford	Dec. 14
Sewage and Air Mains	Sunbury-on-Thames U.D.C.	H. F. Coales, Surveyor, Council Offices, Sunbury	Dec. 15
Crane (20-ton Hand or Electric Overhead Travelling)	Clyde Navigation Trustees	G. H. Baxter, Mechanical Engineer, 16, Robertson-street, Glasgow	Dec. 18
Quay Capstans (Six Electrically-driven)	do.	do.	do.
Capstans (Two Double-geared Pierhead)	do.	do.	do.
Turntables (Two Electrically-worked)	do.	do.	do.
*ROAD WIDENING, PIPE SEWERS, ETC.	Headon U.D.C.	Council's Engineer, Council Offices, Headon, N.W.	do.
Sewage Disposal Works	Rishton U.D.C.	C. J. Lomax, Engineer, 37, Cross-street, Manchester	Dec. 20
*ENLARGE. TO SCH., BOUGHTON MONCHELSEA	Kent Education Committee	Ruck & Smith, Architects, 86, Week-street, Maidstone	do.
Gullies (twenty detritus catch-pit), etc.	Alderley Edge U.D.C.	J. Newton, Son, & Bayley, Engineers, 19, Cooper-st., Manchester	Dec. 23
Houses, Weir Sluices, and Watercourse	Castlerea R.D.C.	C. Mulvany, Engineer's Office, Athlone, Ireland	do.
Turbine, Hydraulic, and Suction Gas Engine Plant ..	do.	do.	do.
Electrical Work	do.	do.	do.
Workhouse Repairs, Docking	Docking Guardians	J. Morris, Surveyor, Dorset House, Heacham	Dec. 30
Drainage Works at Workhouse, Park-road, Gosport..	Alverstoke Guardians	H. A. F. Smith, Architect and Surveyor, Star-chambers, Gosport	Jan. 1
Sewage Disposal Works, Rishton	Rishton U.D.C.	C. J. Lomax, Engineer, 37, Cross-street, Manchester	Jan. 4
*EXTENSION OF PIER	Southsea Clarence Pier Co.	A. H. Bone, Engineer, 148, High-street, Portsmouth	Jan. 10
Baptist Church and Schools, Consett, Co. Durham ..	Mr. John Robson	G. Baines & Son, Archts., 5, Clement's-inn, Strand, London, W.C.	No date.
Engineering Works Extension, Shipley	Warrington Markets & Parks Com.	S. Robinson & Son, Architects, 15, Cheapside, Bradford	do.
Road (1,100 ft., Woodbridge Estate, Guildford)	Staffs Education Committee	Houston & Houston, Surveyor, 143, High-street, Guildford	do.
Hutch-road (1 mile 58 chains), Abington to Craighead		J. M'Gill, M.E., Craigowan, Castlecary, N.B.	do.
Painting Markets and Fountain		T. Longdin, Borough Engineer, Warrington	do.
House at Benchams, Harpford, Newton-Poppleford..		J. A. Lucas, Architect, Guildhall-chambers, Exeter	do.
*NEW SCHOOL AT BURNTWOOD		Offices of the Education Committee, Stafford	do.

PUBLIC APPOINTMENT.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in
*CLERK OF WORKS	Hammersmith Borough Council....	5*l.* per week	Dec. 5

Those marked with an asterisk (*) are advertised in this number. *Competitions*, —. *Contracts*, iv. vi. viii. x. *Public Appointments*, xvii.

TENDERS.—*Continued from page 599.*

ASHFORD (Kent).—For 270 tons of cast-iron water pipes, etc., for the Urban District Council. Mr. W. Terrill, Surveyor, 5, North-street, Ashford :—

—	Rising Main.	Distributing Main.	Valves.	—
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
A. G. Cloake	854 1 3	580 13 2	178 17 0	1,613 11 5
M. Cochrane & Co.	861 11 0	580 3 1	208 15 6	1,650 9 7
Stanton Iron Works	833 3 1	574 0 0	249 0 6	1,654 4 7
Staveley Coal and Iron Co.	827 11 6	565 8 5	273 5 0	1,666 4 11
Birtley Iron Co.	891 14 9	582 4 5	223 17 6	1,697 16 8
Holwell Iron Co.	831 5 3	570 4 0	297 5 0	1,698 14 3
Clay Cross Co.	853 19 11	578 4 0	279 1 0	1,711 4 11
D. Cochrane & Co.	846 11 2	609 17 6	377 18 0	1,733 6 8
Maclaren & Co.	910 18 3	643 13 10	212 19 0	1,767 5 1
W. Weeks & Sons	929 10 0	629 12 3	217 14 6	1,776 16 9
Watson, Gow, & Co.	906 18 9	602 19 10	272 6 3	1,782 4 10
Yarrow & Co.	914 8 9	621 18 2	296 15 6	1,831 2 5
J. Lees & Sons	1,141 7 0	816 12 8	197 3 9	2,155 3 5
C. Jordan & Co.	1,110 15 9	707 2 0	359 0 6	2,177 15 3
Saxon Engineering	1,193 6 0	661 11 11	424 5 0	2,279 2 11
British Mannesmann	816 4 8	543 9 6	—	1,359 14 2
J. Oakes & Co.	801 4 9*	560 16 3*	—	1,362 1 0*
Sheepbridge Coal and Iron Co.	816 6 3	573 18 11	—	1,390 5 2
J. Blakeborough & Sons	—	—	202 14 6*	—
Glenfield & Kennedy	—	—	202 15 0	—
Harrison Appliance	—	—	255 0 0	—
J. & R. Ritchie	—	632 3 1	298 4 6	—

ABERDEEN.—For the construction of an 18-in. diameter fire-clay pipe drain, etc., across the old town links, for the Town Council. Mr. W. Dyack, Burgh Surveyor, 41½, Union-street, Aberdeen :—
J. Leith, 321, Clifton-road £318 1 10

ACTON.—For the erection of the first portion of St. Martin's Church, West Acton, W. Messrs. Edward Monson & Sons, architects, of Grosvenor House, Acton-vale, W., and 22, Buckingham-street, Adelphi, W.C. :—

Pattison & Sons	£10,353	Willcock & Co.	£9,649
Dove Bros.	10,195	Galbraith Bros.	9,499
Goddard & Sons	9,999	Dorey & Co., Ltd., Brentford*	9,332
Godson & Sons	9,879		

BODMIN.—For the erection of married attendants' quarters, Cornwall County Asylum :—
Ham Bros.* £160

BRADFIELD.—For erecting a new school at Bradfield, near Manningtree, for the Tendring Advisory Committee of Essex Education Committee. Mr. F. Whitmore, County Architect, Duke-street, Chelmsford :—
E. Saunders, Dovercourt* £3,121

BURSLEM.—For the erection of new school of art at Burslem, for the Corporation of Burslem. Messrs. A. R. Wood & Son, architects, Burslem and Tunstall :—

S. Wilton	£7,090	J. Grant	£6,650
Yorke & Goodwin	6,995	T. Godwin	6,583
W. Cooke	6,944	W. Grant & Sons, Burslem*	6,500
J. Gallimore	6,815		

BURSLEM.—For the erection of new Congregational Church at Burslem, Staffs., for the Trustees. Messrs. A. R. Wood & Son, architects, Burslem and Tunstall :—

Yorke & Goodwin	£3,850	J. Grant	£3,791
T. Godwin	3,849	W. Grant & Son, Burslem*	3,749
J. H. Broadhurst	3,810	W. Cooke	3,721
J. Cooke	3,800		
C. Cornes	3,799		

CARLTON.—For erecting a fire-station, with hose-tower, etc., Station-road, for the Urban District Council. Mr. J. C. Haller, Engineer and Surveyor, Carlton :—

F. Messom	£630 0	J. Cooper, Ltd.	£575 0
J. Henderson	628 0	T. H. Harper	545 18
J. H. Wood	610 0	S. Loach	535 0
G. Thomas	593 0	G. T. Tegerdine, Carlton, Notts*	535 0
J. Hutchinson & Son	590 0		

CHURWELL.—For erecting a warehouse at Millshaw Mills, for Messrs. W. L. Ingley, Ltd. Messrs. T. A. Buttery & S. B. Birds, architects, Queen-street, Morley :—
Mason: J. Charters, Upper Wortley* £465 12 9
Joiners: Toothill & Balmforth, Bradford* 368 0 0
Slaters: J. Atkinson & Son, Ltd., Leeds* 78 18 0
Plumber: G. A. Firth, Morley* 54 10 6
Ironfounders: Morley Engineering & Pulley Co., Morley* 54 0 11

ENFIELD.—For making-up Beaconsfield-road, Enfield Lock, for the Urban District Council. Mr. R. Collins, Surveyor, Public Offices, Enfield :—

Turner & Co.	£1,151 2 3	J. Jackson	£974 13 6
Fry Bros.	1,081 0 0	E. J. Betts, Enfield Highway*	934 0 0
G. Bell	997 0 0		
Jennings & Grenfell	995 0 0		

GRAYS.—For alterations and additions to Palmer's Endowed Schools, Grays, for Messrs. the Governors of Palmer's Endowed Schools. Mr. C. M. Shiner, architect and surveyor, 6, 7, and 8, Crutched-friars, E.C., and at Grays. Quantities by Mr. G. Silvester, 46, Strand, W.C. :—

G. Brown	£13,878	T. Bruty	£11,700
F. G. Minter	12,600	Sabey & Sons	11,550
W. Potter	12,400	F. & E. Davey	11,378
W. H. Archer	12,289	J. Brown	11,335
F. J. Coxhead	11,947	Hammond & Son	11,329
W. Manders	11,938	H. J. Caiter	10,927
T. Rowbotham	11,707	C. Wall, Ltd.‡	10,409

‡ Recommended for acceptance.

HULL.—For erecting school buildings in Villa-place, for the Education Committee of the Corporation. Mr. J. H. Hirst, City Architect, Town Hall, Hull :—

Hull General Builders, Ltd.	£16,990	F. Beilby	£14,297
Bowman & Sons	15,148	C. Greenwood	14,133
H. T. Arnott	15,089	T. Goates	14,047
J. Simpson & Son	14,860	E. M. Darneley	13,838
G. Scorrer	14,792	G. H. Panton	13,700
G. Longden & Son	14,750	Hockney & Liggins	13,649
J. Houlton & Son	14,750	Hebblewhite & Wilson	13,625
J. H. Fenwick	14,705	J. T. Levitt	13,565
C. J. Houlton	14,545	M. Harper*	13,434
J. Southern	14,540		

ILFORD.—For main sewer works, from Oakland's Park-avenue to the top of The Drive, for the Urban District Council. Mr. H. Shaw, Surveyor, Town Hall, Ilford :—
C. W. Taylor, Essex-road, Chadwell* .. £3,389 10 8

ISLEWORTH.—For sewers and roads, Spring Grove House Estate, Isleworth. Mr. W. Burrough Hill, surveyor, Southampton and Isleworth :—

—	Estimate No. 1.	Estimate No. 2.	Estimate No. 3.	Total.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.
H. E. Morris	2,090 12 4	2,307 6 3	282 15 7	4,680 14 4
W. Ward	2,182 0 0	2,183 0 0	257 0 0	4,622 0 0
J. Mowlem & Co.	2,148 7 7	2,128 13 10	258 16 7	4,535 18 0
W. H. Coston	2,041 0 0	2,076 0 0	255 0 0	4,372 0 0
F. Osenton	1,987 0 0	2,106 0 0	274 0 0	4,367 0 0
E. Strickland & Co.	1,849 15 6	2,038 11 5	347 11 6	4,235 18 5
T. Watson, jun.	1,969 16 8	2,011 17 1	242 6 2	4,223 19 11
F. Hoffman	1,934 0 7	1,994 5 3	255 3 1	4,183 9 0
J. E. Etheridge	1,925 8 10	2,002 12 5	248 19 2	4,177 0 5
C. W. Killingback	1,918 0 0	2,013 0 0	241 0 0	4,172 0 0
H. & W. Smith	1,898 8 11	1,991 1 0	258 7 11	4,145 17 10
W. Neave & Son	1,907 0 0	1,908 0 0	269 0 0	4,084 0 0
T. Free & Son	1,857 17 7	1,922 17 6	232 5 5	4,013 0 6
I. Macklin	1,784 0 0	1,982 0 0	232 0 0	3,998 0 0
J. C. Truman	1,864 0 0	1,900 0 0	230 0 0	3,994 0 0
S. Kavanagh & Co.	1,874 8 0	1,889 0 1	217 7 3	3,980 15 4
R. W. Swaker	1,848 14 9	1,873 15 5	230 19 10	3,953 10 0
T. Chapman	1,818 19 0	1,873 2 6	226 4 0	3,918 5 6
S. Atkins	1,853 1 11	1,844 0 3	221 0 0	3,918 2 2
J. Jackson	1,800 9 6	1,852 9 10	214 7 2	3,867 6 6
J. Selbourne	1,791 0 0	1,789 0 0	221 0 0	3,801 0 0
J. Butt	1,781 9 10	1,844 3 11	227 2 0	3,800 0 0
E. Rogers & Co.	1,753 0 0	1,760 0 0	210 0 0	3,723 0 0
E. Iles	1,687 6 4	1,774 18 4	227 4 9	3,689 9 5
W. H. Wheeler	1,710 16 5	1,740 18 8	207 17 10	3,659 12 11
H. Williams	1,714 12 7	1,678 17 1	254 10 2	3,647 19 10
O. T. Gibbons	1,720 0 0	1,680 0 0	200 0 0	3,600 0 0
G. Bell	1,657 7 3	1,669 13 5	196 19 4	3,524 0 0
T. Adams	1,657 0 0	1,636 0 0	179 0 0	3,472 0 0
Davies, Ball, & Co., Sheerness	1,634 1 8	1,548 13 4	177 4 5	3,359 19 5

LEAVESDEN.—For sewage tank, sewage irrigation works at Leavesden Asylum, near Watford, for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief :—

W. H. Wheeler	£5,909 5 8	G. Bell	£3,395 0 0
Muirhead, Grieg, & Matthews	4,478 13 5	J. Jackson	3,300 7 0
T. Cole	4,210 0 0	Bracey & Clark	3,349 2 6
H. B. Watkins	4,022 0 0	G. Wiggs	3,349 0 0
C. W. Killingback & Co.	3,733 0 0	C. Ford, 1, Station-buildings, Willesden Junction*	3,280 0 0
Grounds & Newton	3,546 14 7		

LONDON.—For Blackfriars new power station :—

		Credit.
R. H. B. Neal, Ltd.	£43,013	—
C. Ansell	41,000	—
J. F. M. Patrick	39,999	£953
Foster & Dicksee	40,842 / 40,832	250
A. Faulks	38,537	50
Perry & Co.	38,093	40
E. Lawrance & Sons	37,775	—
Higgs & Hill, Ltd.	37,484	50
W. H. Lorden & Son	37,273	40
Mowlem & Co., Ltd.	37,088	—
Martin, Wells, & Co., Ltd.	37,023	23
W. Pattinson & Sons, Ltd.	36,811	162
Braid, Pater, & Co., Ltd.	36,467	70
Holliday & Greenwood, Ltd.	36,444	—
Cropley Bros., Ltd.	36,404	100
C. Wall, Ltd.	36,198	55
H. J. Williams, Ltd.	36,187	30
Holloway Bros. (London), Ltd.	36,000	—
W. King & Son	35,939	72
L. Whitehead & Co., Ltd.	35,863	48
W. Johnson & Co., Ltd.	35,474	205
J. Shelbourne & Co.	35,345	175
Leslie & Co., Ltd.	34,987	62
W. H. Hyde	34,900	75
J. C. Johnson & Son	34,853	50
H. Lovatt, Ltd.	34,835	200
J. Smith & Sons, Ltd.	34,590	320
Wallis & Sons, Ltd.	34,460	55
Galbraith Bros.	34,050	50
Waring-White Building Co., Ltd.	33,980	4
J. Garrett & Son	33,675	50
F. G. Minter	33,175	—
Wisdom Bros.*	33,080	90
B. E. Nightingale	32,638	100

LONDON.—For providing and fixing a new 30 h.p. electric motor at the Old Montague-street school, Whitechapel, for use in connexion with the heating and ventilating system, for the London County Council :—

Electromotors, Ltd.	£122 14 0	Siemens, Bros., & Co., Ltd., York-mansions, York-street*	£99 16 6
Electric Construction Co.	111 0 0		
Veritys, Ltd.	105 10 0		
Lancashire Dynamo & Motor Co., Ltd.	102 0 0		

LONDON.—For roadworks, part of Boveney-road, Forest Hill, for Lewisham Borough Council :—
Footways.
W. Pearce £159
Roadway.
W. Pearce 446

LONDON.—For roadworks, part of Brockley-grove, Ladywell, for Lewisham Borough Council :—
B. Martin £1,050 8 3
Atlas Stone Co. 254 0 0

LONDON.—For hot-water apparatus for heating the appliance rooms, etc., at the Northcote-road and Westminster Fire Stations, for the London County Council :—
Northcote-road Station.

E. Deane	£101 12	Comyn Ching & Co., Ltd.	£79 0
Clark, Hunt, & Co., Ltd.	82 0	G. & E. Bradley, 70, Elfort-road, Highbury*	71 10
J. & F. May	79 10		

Westminster Station.

F. Deane	£138 13	Clark, Hunt, & Co., Ltd.	£136 0
Comyn Ching & Co., Ltd.	138 10	G. & E. Bradley, 70, Elfort-road, Highbury*	121 10
J. & F. May	138 5		

LONDON.—For roadworks, in a new road from Ennersdale-road to Nightingale-grove, Lewisham, for Lewisham Borough Council :—
Roadway.
B. Martin, Brockley £674 14 3
Footways.
Atlas Stone Co., Cambridge 183 10 0

LONDON.—For enlargement of manual training centre, Santley-street, Brixton :—
Waring-White Building Co., Ltd. £788 0 0
F. & H. F. Higgs 759 0 0
Galbraith Bros. 743 12 0
W. Downs 740 0 0
Rice & Son 730 0 0
W. Smith & Son 647 0 0
T. G. Sharpington 636 0 0
W. Johnson & Co., Ltd. 618 0 0
J. Marsland & Son 611 2 6
J. Garrett & Son 610 0 0
T. D. Leng 603 0 0
L. Whitehead & Co., Ltd., Portland-place, Clapham-road* 586 0 0
[The estimate, comparable with the tenders, is 785*l.*]

LONDON.—For the adaptation of the disused infants' school, on the South-grove site, Mile End, for a school for the accommodation of forty mentally defective children and for laundry and housewifery centres, and of the provision of a manual training centre (on arches) for forty boys, for the London County Council :—

Staines & Son	£5,792 0 0	A. E. Symes	£4,605 0 0
W. Harris	5,662 0 0	W. Lawrence & Son	4,487 0 0
Perry & Co.	5,323 0 0	J. Shelbourne & Co.*	4,434 2 11
J. Grover & Son	5,133 0 0		
J. Greenwood, Ltd.	4 662 0 0		

[The estimate, comparable with the tenders, is £5,250.]

LONDON.—For roadworks, Hillstone-street, Lea Bridge-road, for the Hackney Borough Council. Mr. N. Scorgie, Borough Engineer and Surveyor, Town Hall, Hackney :—

Grounds & Newton	£451 1 1	Waterhouse & Hanson	£388 3 0
T. C. Starkey	450 15 9	G. Porter	381 10 8
Snewin Bros. & Co.	450 0 0	W. Griffiths & Co., Ltd.	379 19 1
W. Manders	434 8 6	A. T. Catley, 23, Lloyd-square, W.C.*	373 16 0
G. J. Anderson	396 3 6		

LONDON.—For transferring a vacant iron building from the Blackthorn-street site, Bow and Bromley, to the Osborn-place site, Whitechapel, for the London County Council:—

F. Smith & Co., Ltd.	£862 0	A. Leather	£758 0
J. Harrison & Co.	793 10	W. Harbrow, South Bermondsey Station*	744 0
J. McManus	781 0		

LONDON.—For fittings, furniture, painting, decorations, etc., for the Hearts of Oak Benefit Society, New Offices, Euston-road, N.W.:—

Sage & Co.	£18,304	14	10
Shannon, Ltd.	16,456	4	1
J. S. Henry, Ltd.	15,768	5	6
Barker & Co., Ltd.	15,230	0	0
Hampton & Sons, Ltd.	15,042	1	6
Waring & Sons	14,031	2	6
Walker & Sons	13,981	15	0
Maple & Co., Ltd.	13,849	7	10
North of England Furnishing Co, Trading and Manufacturing Co., Ltd.	13,723	15	11
	13,377	0	0
Cohen & Sons, Ltd.	13,372	15	6
Goodhalls, Ltd., Manchester‡	13,168	2	6
Garnett & Sons, Warrington‡	13,142	4	6
Chamberlains, Ltd., Birmingham‡	12,848	4	0

‡ Selected to do parts of the work, *i.e.*:—

Garnett & Sons	£4,252	19	4
Chamberlains, Ltd.	3,112	7	1
Goodhalls, Ltd.	2,804	17	10

LONDON.—For alterations and repairs to ice wells, Great Cambridge-street, Hackney, W.C., for Messrs. Carlo Gatti, Stevenson, & Slaters, Ltd. Mr. H. P. Drew, architect, 33, King-street, Covent Garden, London, W.C.:—

Thomas & Edge, Woolwich* £698

LONDON.—For new stabling and alterations to ice wells, Kings Cross, N., for Messrs. Carlo Gatti, Stevenson, & Slaters, Ltd. Mr. H. P. Drew, architect, 33, King-street, Covent Garden, London, W.C.:—

L. H. & R. Roberts	£2,381	Edwards & Medway	£2,212
W. Morton	2,350	Wilkinson Bros.	2,075
I. C. Richards & Co.	2,320	Thomas & Edge, Woolwich*	2,035

LONDON.—For building boundary wall at Western Fever Hospital, Seagrave-road, Fulham, S.W., for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief:—

E. Swan & Sons	£425 0	F. Kinnaird	£350 0
Martin, Wells, & Co., Ltd.	400 0	H. Kent	339 0
Hailey & Hailey	398 0	Marchant & Hirst	334 0
T. Cole	398 10	J. & W. Drake	328 0
F. Webster & Son	397 0	J. Barker & Co., Ltd.	327 0
H. C. Payne	388 0	J. & C. Bowyer	323 0
G. Godson & Sons	386 0	N. J. Graham	289 10
Spiers & Son	378 0	T. Pearce	277 0
W. Hussey	375 0	Radford & Greaves, Derby*	210 0
R. Iles, Ltd.	372 0		
W. Taylor & Co.	357 0		

MORLEY.—For erecting a warehouse, Glen Mills, for Mr. A. Glover. Messrs. T. A. Butlery and S. B. Birds, architects, Queen-street, Morley:—

Masons: J. Brown & Son, Bingley	£780	0	0
Joiner: A. Furness, Morley	642	0	0
Slaters: J. Atkinson & Son, Ltd., Leeds	85	0	0
Ironfounders: Morley Engineering and Pulley Co., Morley	68	2	10
Plumber: B. Gomersall, Morley	33	4	0
Plasterers: Sykes, Idle, & Co., Gomersall	29	10	0

NUNEATON.—For constructing a high-level service reservoir (50,000 gallons) in Hennebique's ferro-concrete, for the Nuneaton and Chilvers Coton Urban District Council. Mr. F. C. Cook, Waterworks Engineer, Council offices, Nuneaton:—

Liverpool Hennebique Ferro-concrete Co., Ltd.* £303 14 6

QUEEN'S FERRY (Flintshire).—For erecting an elementary school to accommodate 300 children, for the Flintshire Education Committee. Mr. S. Evans, County Surveyor and Architect, Mold:—

E. O. Probert, Hope, near Mold* .. £3,324 2 2

[Twenty-one Tenders were received.]

SHOTTON (Flintshire).—For the erection of a temporary school building, for the Flintshire Education Committee:—

M. S. Rogers, Flint* £396 4 0

[Sixteen Tenders were received. Work to be completed in five weeks.]

SHILDON (Durham).—For road works, Cottage-row, back All Saints-road and Bouch-street, and back Kimberley-terrace, for Shildon and East Thickley Urban District Council. Mr. M. Turnbull, Surveyor, Shildon. Quantities by Surveyor.

Back All Saints-road and Bouch-street.

W. Burdon, Shildon* £109 9 2

Back Kimberley-terrace.

J. Moore, New Shildon* 57 19 6

Cottage-row.

A. Metcalfe, Shildon* 53 19 9

SUNDERLAND.—For private street improvement works, Hylton, for the Rural District Council. Mr. T. Young, Surveyor, 17, John-street, Sunderland:—

G. E. Simpson, Newcastle-on-Tyne*..
J. W. White.....
Henderson & Armstrong .....
J. Morice Wright.....
J. Emmerson .....
R. Hudson & Sons .....
J. Meredith .....
A. Walker & Sons .....

} Scheduled prices.

SUNDERLAND.—For private-street improvement works, Fulwell, for the Urban District Council. Mr. T. Young, Surveyor, 17, John-street, Sunderland:—

G. E. Simpson, Newcastle-on Tyne*
J. W. White .....
Henderson & Armstrong.....
J. Morice Wright .....
J. Emmerson.....
R. Hudson & Sons .....
J. Meredith .....
A. Walker & Sons.....

} Scheduled prices.

SWANLEY.—For surface-water drainage, and tar paving at White Oak School, Swanley, Kent, for the Metropolitan Asylums Board. Mr. W. T. Hatch, Engineer-in-Chief:—

Chittenden & Simmons	£1,328 0 0	W. H. Wheeler	£988 10 9
J. Lonsdale	1,213 0 0	Treeby & Co.	975 10 6
J. Coles & Son	1,142 0 0	J. C. Trueman	963 0 0
C. W. Killingback & Co.	1,090 0 0	Grounds & Newton	910 0 0
J. Wainwright & Co., Ltd.	1,084 6 7	J. Ellingham & Sons	860 0 0
Fry Bros.	1,067 9 4	Enness Bros., Erith*	784 0 0

TWICKENHAM.—For the erection of nineteen shops, Twickenham, for Mr. A. Moss. Mr. Jasper J. Kelf, architect, 15, Bishopgate-street Without, London, E.C.:—

S. N. Soole & Son	£19,500 0	F. G. Lawrence	£16,120 0
Wisdom Bros.	19,300 0	H. Wilson	15,788 3
S. E. Moss & Co.	19,000 0	J. J. Wheeler	15,429 0

YARDLEY.—For making-up, etc., of Alexander-road and Acock's-green, for the Urban District Council. Mr. A. W. Smith, Engineer and Surveyor, Council House, Sparkhill, near Birmingham:—

J. Young, Oxford-street, Rugby* £380 10

J. J. ETRIDGE, Jr.

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